Supplementary Materials

Application of Silver Nanoparticles in the Multicomponent Reaction Domain: A Combined Catalytic Reduction Methodology to Efficiently Access Potential Hypertension or Inflammation Inhibitors

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Table of contents	Page

Table S1. Physicochemical characteristics of HMS mesoporous silica and the 10, 30 and 50% Ag/HMS catalysts prepared by the amines reduction method.[22]

Catalyst[a]	Specific surface area[b] (m^2/g)	Total pore volume[c] (cm^3/g)	Average pore size[d] (nm)	Ag crystal size[e] (nm)
HMS	727	1.066	3.3	-
10% Ag/HMS	382 (424)	1.313	13[f]	15
30% Ag/HMS	129 (184)	0.875	24[f]	25
50% Ag/HMS	76 (152)	0.284	10[f]	33

[a]10%, 30% and 50% refer to the nominal Ag loading (wt.%) of the catalysts. [b]Determined by the multi point BET method. [c]Total pore volume at P/Po=0.99. [d]Determined from the pore size distribution curves of BJH analysis based on N_2 adsorption data. [e]Estimated by Scherrer equation using the XRD data of the reflection at 2θ=38°. [f]The catalysts contain also macroporous structure.

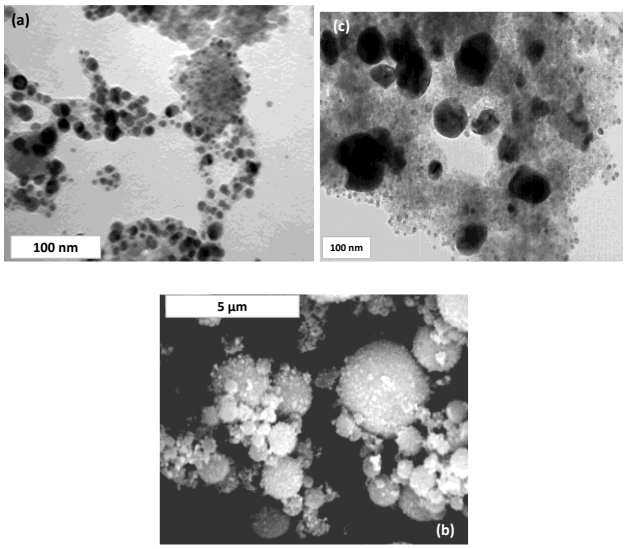


Figure S1. Transmission electron microscopy (TEM) images of the (a) 10% Ag/HMS and (c) 30% Ag/HMS, and scanning electron microscopy (SEM) image of the (b) 50% Ag/HMS.[22]

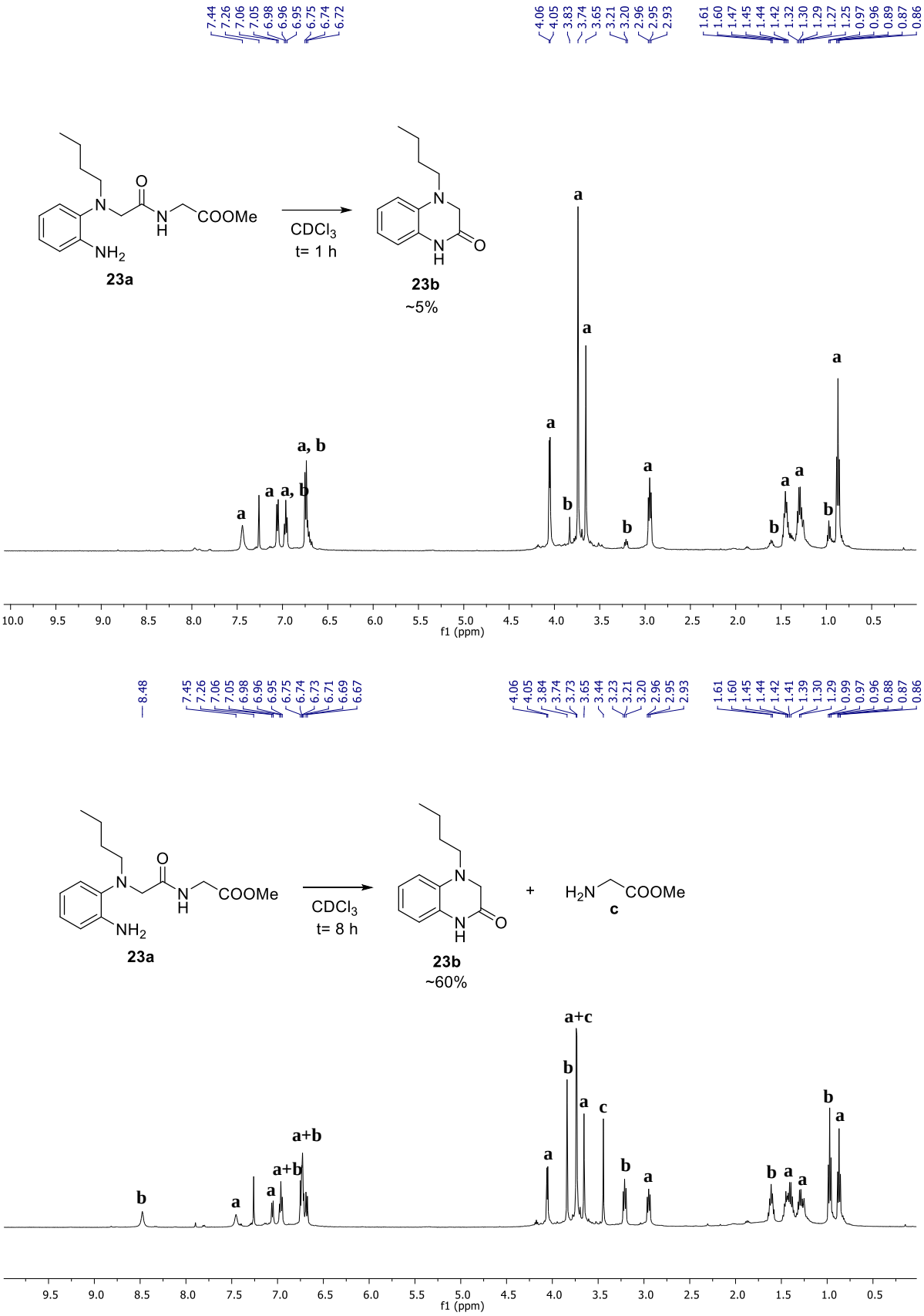


Figure S2. ^{1}H NMR spectra of the crude mixture of the in situ C-N cyclization process of amine a to the corresponding b, in $CDCl_3$ (t=0 and 8h)

^{1}H and ^{13}C NMR data for nitro compounds 1-27

*N-(tert-butyl)-2-(4-chlorophenyl)-2-((4-methoxybenzyl)(4-nitrophenyl)amino)acetamide (**1**):* Yellow solid, 1515 mg, yield 63%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.07 (d, 2H, *J*= 9.3 Hz),7.28 (d, 2H, *J*= 8.5 Hz), 7.20 (d, 2H, *J*= 8.6 Hz), 7.00 (d, 2H, *J*= 8.6 Hz), 6.80 (dd, 4H, J_1= 9.1 Hz, J_2= 2.5 Hz), 5.80 (s, 1H), 5.38 (s, 1H), 4.69 (d, 1H, *J*= 17.2 Hz), 4.49 (d, 1H, *J* = 17.2 Hz), 3.77 (s, 3H), 1.25 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$): 168.1, 159.1, 153.7, 139.2, 134.8, 133.1, 130.7 (2C), 129.2, 129.1 (2C), 127.8 (2C), 125.9 (2C), 114.4 (2C), 113.2 (2C), 67.8, 55.5, 52.5, 52.2, 28.6 (3C). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{26}H_{29}ClN_3O_4$ 482.1847, found 482.1838.

*N-benzyl-2-(cyclohexyl(2-nitrophenyl)amino)-3-methylbutanamide (**2**):* Orange oil, 961 mg, yield 47%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.74-7.77 (m, 1H),7.48 (d, 1H, *J*= 8.0 Hz), 7.44 (t, 1H, *J*= 7.7 Hz), 7.31 (d, 1H, *J*= 8.0 Hz), 7.19 (t, 1H, *J*= 7.7 Hz), 7.14-7.16 (m, 3H), 7.01-7.03 (m, 1H), 4.47-4.51 (m, 1H), 4.10 (dd, 1H, J_1= 14.4 Hz, J_2= 4.8 Hz), 3.97 (d, 1H, *J*= 4.3 Hz), 2.78-2.84 (m, 1H), 2.16-2.22 (m, 1H), 1.75 (dt, 1H, J_1= 11.9 Hz, J_2= 3.2 Hz), 1.57-1.66 (m, 3H), 1.43 (dt, 1H, J_1= 13.1 Hz, J_2= 3.1 Hz), 1.08-1.15 (m, 1H), 1.05 (d, 3H, *J*= 6.9 Hz), 0.96-1.02 (m, 1H), 0.89 (d, 3H, *J*= 6.7 Hz),0.65-0.78 (m, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): 170.6, 149.8, 139.1, 138.3, 131.8, 131.1, 128.5 (2C), 127.9 (2C), 127.0, 126.3, 124.9, 69.9, 60.8, 42.9, 29.4, 28.4, 27.6, 26.1, 25.8, 25.5, 20.6, 16.4. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{24}H_{32}N_3O_3$ 410.2444, found 410.2442.

*N-cyclohexyl-2-((2-nitrophenyl)(propyl)amino)butanamide (**3**):* Red- orange oil, 902 mg, yield 52%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.59 (d, 1H, *J*= 8.0 Hz), 7.43 (t, 1H, *J*= 7.6 Hz), 7.25 (d, 1H, *J* = 8.3 Hz), 7.11 (t, 1H, *J*= 7.6 Hz), 6.83 (d, 1H, *J*= 8.7 Hz), 3.62-3.69 (m, 1H), 3.50-3.54 (m, 1H), 2.92-2.99 (m, 1H), 2.71-2.78 (m, 1H), 1.74-1.83 (m, 2H), 1.57-1.66 (m, 5H), 0.97-1.32 (m, 7H), 0.82 (t, 3H, *J*= 7.3 Hz), 0.70 (t, 3H, *J*= 7.3 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 170.8, 147.0, 142.8, 132.7, 125.5, 124.9, 124.0, 69.0, 52.7, 47.7, 33.0, 32.6, 25.5, 24.72, 24.68, 22.9, 20.2, 11.4, 11.1. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{19}H_{30}N_3O_3$ 348.2287, found 348.2283.

*2-(benzyl(4-nitrophenyl)amino)-N-(2,5-dichlorophenyl)-4-methylpentanamide (**4**):* Yellow oil, 1576 mg, yield 65%; Mixture of topo-isomers in ratio ca. 97/3; ^{1}H NMR (500 MHz, $CDCl_3$): 8.36 (s, 1H), 8.19 (br s, 1H), 8.12 (d, 2H, *J*= 9.4 Hz), 7.33 (m, 2H), 7.24-7.28 (m, 3H), 7.21 (d, 1H, *J*= 8.6 Hz), 7.01 (dd, 1H, J_1= 8.7 Hz, J_2= 2.5 Hz), 6.86 (d, 2H, *J*= 9.4 Hz), 4.79 (d, 1H, *J*= 17.0 Hz), 4.65 (d, 1H, *J*= 17.0 Hz), 4.54 (t, 1H, *J*= 6.3 Hz), 2.22 (q, 1H, *J*= 6.9 Hz), 1.66-1.79 (m, 2H), 0.99 (s, 3H), 0.91 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): 169.4, 153.0, 139.5, 136.4, 134.8, 133.8, 129.8, 129.2 (2C), 128.0, 126.8 (2C), 126.2 (2C), 125.1, 121.4, 121.0, 113.4 (2C), 63.2, 52.9, 38.2, 26.0, 22.7, 22.6. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{25}H_{26}Cl_2N_3O_3$ 486.1351, found 488.1343.

*2-(4-chlorophenyl)-N-cyclohexyl-2-((4-methoxybenzyl)(4-nitrophenyl)amino)acetamide (**5**):* Yellow solid, 1470 mg, yield 58%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.06 (d, 2H, *J*= 9.3 Hz), 7.27 (d, 2H, *J*= 8.6 Hz), 7.20 (d, 2H, *J*= 8.4 Hz), 7.00 (d, 2H, *J*= 8.5 Hz), 6.79 (d, 4H, *J*= 8.9 Hz), 5.93 (d, 1H, *J*= 8.0 Hz), 5.46 (s, 1H), 4.66 (d, 1H, *J*= 17.1 Hz), 4.50 (d, 1H, *J*= 17.1 Hz), 3.76 (s, 3H), 1.73-1.80 (m, 1H), 1.54-1.63 (m, 2H), 1.43 (s, 2H), 1.20-1.35 (m, 3H), 1.04-1.12 (m, 1H), 0.92-1.00 (m, 2H); ^{13}C NMR (125 MHz, $CDCl_3$): 167.9, 159.1, 153.7, 139.1, 134.8, 133.2, 130.7 (2C), 129.1 (2C), 127.8 (2C), 125.9 (2C), 125.6, 114.4 (2C), 113.2 (2C), 67.4, 55.4, 52.3, 48.8, 32.9, 32.8, 30.5, 25.5, 24.8. HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{28}H_{30}ClN_3O_4Na$ 530.1817, found 530.1801.

*N-(tert-butyl)-2-(4-chlorophenyl)-2-((4-methoxybenzyl)(2-nitrophenyl)amino)acetamide (**6**):* Orange oil, 1611 mg, yield 67%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.64 (d, 1H, *J*= 8.0 Hz), 7.41 (d, 2H, *J*= 8.3 Hz), 7.31 (d, 3H, *J*= 8.3 Hz), 7.19 (t, 1H, *J*= 7.7 Hz), 7.14 (br s, 1H), 6.91 (d, 1H, *J*= 8.0 Hz), 6.68 (d, 2H, *J*= 8.4 Hz), 6.62 (d, 2H, *J*= 8.4 Hz), 4.68 (s, 1H), 3.93 (s, 2H), 3.74 (s, 3H), 1.12 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$): 169.2, 159.4, 147.6, 142.0, 135.2, 134.2, 132.5, 130.9 (2C), 130.0 (2C), 129.0 (2C), 127.6, 126.2, 125.6, 124.5, 113.7 (2C), 71.7, 57.1, 55.3, 51.1, 28.4 (3C). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{26}H_{29}ClN_3O_4$ 482.1847, found 482.1838.

*N-(tert-butyl)-2-(4-chlorophenyl)-2-((3-methoxybenzyl)(2-nitrophenyl)amino)acetamide (**7**):* Yellow solid, 1515 mg, yield 63%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.66 (dd, 1H, J_1= 8.0 Hz, J_2= 1.3 Hz), 7.40 (d, 2H, *J*= 8.4 Hz), 7.32-7.35 (m, 3H), 7.19 (t, 1H, *J*= 7.7 Hz), 7.12 (br s, 1H), 7.07 (t, 1H, *J*= 7.9 Hz), 6.95 (d, 1H, *J*= 8.1 Hz), 6.75 (dd, 1H, J_1= 8.3 Hz, J_2= 2.3 Hz), 6.34 (d, 1H, *J*= 7.5 Hz), 6.28 (br t, 1H), 4.73 (s, 1H), 3.98 (q, 2H, *J*= 13.5 Hz), 3.66 (s, 3H), 1.14 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$): 169.0, 159.6, 147.4, 142.0, 135.9, 134.8, 134.3, 132.6, 130.2 (2C), 129.4, 129.1 (2C), 127.3, 125.6, 124.7, 121.8, 114.7, 113.9, 71.9, 57.2, 55.2, 51.2, 28.4 (3C). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{26}H_{29}ClN_3O_4$ 482.1847, found 482.1840.

*N-(4-bromobenzyl)-2-(N-cycloheptylacetamido)-2-(3-nitrophenyl)acetamide (**8**):* Dark brown oil, 1979 mg, yield 79%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.10-8.13 (m, 2H), 7.60 (d, 1H, *J* = 7.7 Hz), 7.48 (t, 1H, *J* = 8.0 Hz), 7.43 (d, 2H, *J* = 8.3 Hz), 7.14 (d, 2H, *J* = 8.3 Hz), 4.41 (d, 2H, *J*= 6.0 Hz), 3.83-3.9 (m, 1H), 2.24 (s, 3H), 1.44-1.97 (m, 12H); ^{13}C NMR (125 MHz, $CDCl_3$): 171.5, 170.3, 148.5, 138.8, 137.2, 133.2, 131.9 (2C), 129.7, 129.5 (2C), 122.8, 122.1, 121.4, 62.4, 53.6, 43.3, 34.1, 33.9, 27.3, 27.2, 25.4, 25.1, 23.1. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{24}H_{29}BrN_3O_4$ 502.1341, found 502.1335.

N-((1s,3s)-adamantan-1-yl)-2-(N-cyclopentylformamido)-2-(4-nitrophenyl)acetamide (9): Pale brown solid, 1381 mg, yield 65%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.37 (s, 1H), 8.19 (d, 2H, *J*= 8.7 Hz), 7.51 (d, 2H, *J* = 8.7 Hz), 6.38 (s, 1H), 5.43 (s, 1H), 3.92-3.98 (m, 1H), 1.99-2.12 (m, 10H), 1.46-1.79 (m, 14H); ^{13}C NMR (125 MHz, $CDCl_3$): 167.7, 163.2, 147.5, 143.1, 128.7 (2C), 123.8 (2C), 61.3, 59.6, 52.7,

41.4 (3C), 36.4 (3C), 32.5, 32.3, 29.5 (3C), 24.2, 24.1. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{24}H_{32}N_3O_4$ 426.2393, found 426.2385.

N-benzyl-2-(4-chlorophenyl)-N-(2-((2-methoxy-4-nitrophenyl)amino)-2-oxoethyl)acetamide ***(10)****:* Yellow solid, 1494 mg, yield 64%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.87 (s, 1H), 8.45 (d, 1H, *J*= 8.6 Hz), 7.84 (d, 1H, *J*= 8.6 Hz), 7.69 (s, 1H), 7.34-7.39 (m, 3H), 7.29 (d, 2H, *J*= 8.0 Hz), 7.22 (d, 2H, *J* = 7.3 Hz), 7.17 (d, 2H, *J* = 6.8 Hz), 4.73 (s, 2H), 4.19 (s, 2H), 3.91 (s, 3H), 3.85 (s, 2H); ^{13}C NMR (125 MHz, $CDCl_3$): 172.4, 167.4, 147.5, 143.1, 135.2, 133.5, 133.0, 132.7, 130.3 (2C), 129.1 (2C), 128.8 (2C), 128.2, 126.7 (2C), 118.4, 117.4, 105.2, 56.3, 52.9, 51.5, 39.5. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{24}H_{23}ClN_3O_5$ 468.1326,found 468.1318.

N-(4-methoxybenzyl)-1-(4-nitrophenyl)-1-(1-(2,4,4-trimethylpentan-2-yl)-1H-tetrazol-5-yl)methanamine ***(11)****:* Pale brown solid, 1943 mg, yield 86%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.22 (d, 2H, *J*= 8.7 Hz), 7.57 (d, 2H, *J*= 8.7 Hz), 7.22 (d, 2H, *J*= 8.6 Hz), 6.87 (d, 2H, *J*= 8.6 Hz), 5.35 (s, 1H), 3.80 (s, 3H), 3.69 (d, 2H, *J*= 6.8 Hz), 1.80 (d, 2H, *J*= 4.4 Hz), 1.66 (s, 3H), 1.63 (s, 3H), 0.64 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$): 159.3, 154.9, 147.9, 130.2, 129.72 (2C), 129.65 (2C), 124.3 (2C), 114.2 (2C), 65.4, 56.6, 55.5, 54.0, 50.7, 31.7, 30.7 (3C), 30.5, 30.3. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{24}H_{33}N_6O_3$ 453.2614, found 453.2607.

N-((1-(tert-butyl)-1H-tetrazol-5-yl)(5-chloro-2-nitrophenyl)methyl)propan-2-amine ***(12)****:* Pale white solid, 1619 mg, yield 92%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.91 (d, 1H, *J*= 8.6 Hz), 7.44 (dd, 1H, J_1= 8.6 Hz, J_2= 1.8 Hz), 7.20 (s, 1H), 6.34 (s, 1H), 2.60-2.67 (m, 1H), 1.74 (s, 9H), 1.04 (d, 3H, *J*= 6.2 Hz), 1.00 (d, 3H, *J*= 6.2 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 154.4, 147.4, 139.9, 136.3, 129.4, 129.3, 126.9, 62.2, 50.8, 47.0, 30.0 (3C), 22.9, 22.1. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{15}H_{22}ClN_6O_2$ 353.1493, found 353.1488.

Methyl 2-(5-((3-nitrophenyl)(p-tolylamino)methyl)-1H-tetrazol-1-yl)acetate ***(13)****:* Dark brown oil, 1146 mg, yield 60%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.29 (br t, 1H), 8.14 (d, 1H, *J*= 8.0 Hz), 7.77 (d, 1H, *J*= 7.7 Hz), 7.52 (t, 1H, *J*= 8.0 Hz), 6.95 (d, 2H, *J*= 8.0 Hz),6.55 (d, 2H, *J*= 8.3 Hz), 6.09 (d, 1H, *J*= 7.0 Hz), 5.25 (s, 2H), 3.66 (s, 3H), 2.20 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): 166.1, 155.5, 148.5, 142.4, 139.3, 133.8, 130.2, 130.1 (2C), 129.5, 123.7, 122.6, 114.4 (2C), 53.3, 53.1, 48.9, 20.4. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{18}H_{19}N_6O_4$ 383.1468, found 383.1463.

N-(1-(1-(4-methoxy-2-nitrphenyl)-1H-tetrazol-5-yl)-3-methylbutyl)cyclopentanamine ***(14)****:* Dark brown oil, 1346 mg, yield 72%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.76 (d, 1H, *J*= 2.8 Hz), 7.45 (d, 1H, *J*= 8.6 Hz), 7.31 (dd, 1H, J_1= 8.8 Hz, J_2= 2.6 Hz), 4.00 (s, 3H), 3.93 (t, 1H, *J*= 7.0 Hz), 2.91 (q, 1H, *J*= 6.0 Hz), 1.40-1.70 (m, 8H), 0.97-1.27 (m, 3H), 0.83 (d, 3H, *J*= 6.5 Hz), 0.77 (d, 3H, *J*= 6.4 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 161.9, 145.7, 131.1, 119.9, 119.7, 111.3, 57.3, 56.7, 49.8, 43.7, 33.4, 32.8,

24.8, 24.0, 23.9, 22.8, 22.1. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{18}H_{27}N_6O_3$ 375.2145, found 375.2137.

*N-(1-(1-benzyl-1H-tetrazol-5-yl)cyclohexyl)-2-methyl-5-nitroaniline (**15**):* Yellow solid, 1293 mg, yield 66%; ^{1}H NMR (500 MHz, DMSO-d_6): 7.29 (d, 1H, *J*= 8.1 Hz), 7.14 (d, 1H, *J*= 8.2 Hz), 7.06-7.07 (br t, 3H), 6.94-6.95 (m, 2H), 6.36 (s, 1H), 5.82 (s, 2H), 5.46 (br s, 1H), 2.44-2.47 (m, 2H), 2.31 (s, 3H), 2.05-2.08 (m, 3H), 1.49-1.64 (m, 4H), 1.34-1.38 (m, 1H); ^{13}C NMR (125 MHz, DMSO-d_6): 159.1, 146.0, 142.8, 134.6, 132.3, 130.7, 128.1 (2C), 127.5, 127.0 (2C), 111.9, 105.3, 53.3, 50.6, 33.1, 24.6, 20.8 (2C), 18.0 (2C). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{21}H_{25}N_6O_2$ 393.2039, found 393.2032.

*Methyl 2-(((1-(tert-butyl)-1H-tetrazol-5-yl)(5-chloro-2-nitrophenyl)methyl) amino)-2-methylpropanoate (**16**):* Orange- brown solid, 1804 mg, yield 88%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.84 (d, 1H, *J*= 8.6 Hz), 7.41 (dd, 1H, J_1= 8.6 Hz, J_2= 2.2 Hz), 7.05 (d, 1H, *J*= 2.1 Hz), 6.52 (s, 1H), 3.40 (s, 3H), 1.71 (s, 9H), 1.29 (s, 3H), 1.24 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): 174.9, 154.4, 147.3 139.7, 136.4, 129.7, 129.3, 126.8, 62.2, 57.7, 52.1, 48.2, 30.0 (3C), 26.3, 24.4. HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{17}H_{23}ClN_6O_4Na$ 403.1620, found 403.1624.

*Methyl 3-((2-(1-(tert-butyl)-1H-tetrazol-5-yl)-1-(4-nitrophenyl)ethyl)amino)propanoate (**17**):* Red solid, 1375 mg, yield 76%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.18 (d, 2H, *J*= 8.6 Hz), 7.53 (d, 2H, *J*= 8.6 Hz), 5.46 (s, 1H), 3.65 (s, 3H), 2.76-2.85 (m, 2H), 2.50 (t, 2H, *J*= 6.3Hz), 1.68 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$): 172.8, 154.7, 147.9, 145.6, 129.2 (2C), 124.2 (2C), 61.8, 58.4, 51.9, 43.4, 34.8, 30.2 (3C). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{16}H_{23}N_6O_4$ 363.1781, found 363.1775.

*Methyl 2-(((1-(tert-butyl)-1H-tetrazol-5-yl)(4-nitrophenyl)methyl)amino)propanoate (**18**):* Yellow oil, 1466 mg, yield 81%; Mixture of diastereomers a and b in ratio d.r.=65/35: ^{1}H NMR (500 MHz, $CDCl_3$): 8.18 (d, 2H, *J*= 8.5 Hz, a), 8.17 (d, 2H, *J*= 8.3 Hz, b), 7.60 (d, 2H, *J*= 8.7 Hz, a), 7.51 (d, 2H, *J*= 8.6 Hz, b), 5.67 (s, 2H, a and b), 3.66 (s, 3H, a), 3.65 (s, 3H, b), 3.23-3.29 (m, 2H, a and b), 1.69 (s, 9H, a), 1.60 (s, 9H, b), 1.34 (d, 3H, *J*= 6.9 Hz, b), 1.30 (s, 3H, *J*= 6.8 Hz, a); ^{13}C NMR (125 MHz, $CDCl_3$): 174.7 (b), 174.3 (a), 154.6 (a), 154.5 (b), 148.0 (a), 147.9 (b), 145.4 (b), 145.1 (a), 129.6 (2C, a), 129.4 (2C, b), 124.23 (2C, a), 124.21 (2C, b), 61.9 (a), 61.8 (b), 56.4 (b), 55.6 (a), 54.4 (b), 53.7 (a), 52.3 (b), 52.2 (a), 30.2 (3C, a), 30.1 (3C, b), 28.7 (b), 18.9 (a). HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{16}H_{22}N_6O_4Na$ 385.1595, found 385.1587.

*Methyl 2-(((1-(tert-butyl)-1H-tetrazol-5-yl)(4-nitrophenyl)methyl)amino)-4-methylpentanoate (**19**):* Yellow oil, 1474 mg, yield 73%; Mixture of diastereomers a and b in ratio *d.r.* =70/30: ^{1}H NMR (500 MHz, $CDCl_3$): 8.17 (d, 2H, *J*= 8.6 Hz, a), 8.14 (d, 2H, *J*= 8.6 Hz, b), 7.63 (d, 2H, *J*= 8.6 Hz, a), 7.52 (d, 2H, *J*= 8.6 Hz, b), 5.56 (s, 2H, a and b), 3.62 (s, 3H, a), 3.58 (s, 3H, b), 3.21 (t, 1H, *J*= 6.9 Hz, b), 3.14 (t, 1H, *J*= 6.9 Hz, a), 1.68 (s, 9H, a), 1.59 (s, 9H, b), 1.44-1.50 (m, 4H, a and b), 0.93-0.96 (m, 2H, a and b), 0.84 (d, 3H, *J*= 6.6 Hz, b), 0.81 (d, 6H, *J*= 6.6 Hz, a and b), 0.66 (d, 3H, *J*= 6.6 Hz, a); ^{13}C

NMR (125 MHz, $CDCl_3$): 174.9 (b), 174.7 (a), 154.7 (a), 154.4 (b), 148.0 (a), 147.8 (b), 145.5 (b), 145.3 (a), 129.7 (2C, a), 129.5 (2C, b), 124.0 (2C, a and b), 61.8 (a), 61.6 (b), 57.8 (b), 57.2 (a), 56.5 (b), 56.0 (a), 52.0 (a and b), 42.5 (b), 42.1 (a), 30.2 (3C, a), 30.0 (3C, b), 24.64 (b), 24.57 (a), 22.9 (b), 22.8 (a), 21.9 (b), 21.7 (a). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{19}H_{29}N_6O_4$ 405.2250, found 405.2244.

Methyl 2-(((1-(tert-butyl)-1H-tetrazol-5-yl)(4-nitrophenyl)methyl)amino)-3-methylbutanoate ***(20)****:* Yellow oil, 1657 mg, yield 85%; Mainly the one diastereomer in ratio *d.r.* =99/1: ^{1}H NMR (500 MHz, $CDCl_3$): 8.14 (d, 2H, *J*= 8.7 Hz), 7.60 (d, 2H, *J*= 8.7 Hz,), 5.47 (s, 1H), 3.59 (s, 3H), 2.87 (d, 1H, *J*= 5.8 Hz), 1.89-1.93 (m, 1H), 1.67 (s, 9H), 0.86 (d, 3H, *J*= 6.7 Hz), 0.83 (d, 3H, *J*= 6.7 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 173.9, 154.8, 147.9, 145.4, 129.6 (2C), 123.9 (2C), 65.0, 61.7, 56.6, 51.8, 31.5, 30.1 (3C), 19.2, 18.2. HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{18}H_{27}N_6O_4Na$ 413.1908, found 413.1897.

Methyl 2-(2-((4-chlorobenzyl)(2-nitrophenyl)amino)acetamido)acetate ***(21)****:* Brown oil, 997 mg, yield 51%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.77 (d, 1H, *J*= 8.1 Hz), 7.72 (br t, 1H), 7.48 (t, 1H, *J*= 7.8 Hz), 7.23 (d, 2H, *J*= 8.3 Hz), 7.14-7.19 (m, 2H), 7.03 (d, 2H, *J*= 8.3 Hz), 4.14 (s, 2H), 4.04 (d, 2H, *J*= 5.8 Hz), 3.78 (s, 2H), 3.70 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): 169.9, 169.7, 145.0, 143.6, 134.1, 133.9, 133.7, 130.3 (2C), 128.9 (2C), 125.9, 124.3, 124.2, 59.0, 55.5, 52.4, 41.0. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{18}H_{19}ClN_3O_5$ 392.1013, found 392.1008.

Methyl 2-(2-((4-methoxybenzyl)(2-nitrophenyl)amino)acetamido)acetate ***(22)****:* Orange oil, 1335 mg, yield 69%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.83 (br t, 1H), 7.78 (dd, 1H, J_1= 8.1 Hz, J_2= 1.4 Hz), 7.47 (t, 1H, *J*= 7.8 Hz), 7.16 (t, 1H, *J*= 7.8 Hz), 7.13 (d, 1H, *J*= 8.2 Hz), 6.99 (d, 2H, *J*= 8.6 Hz), 6.78 (d, 2H, *J*= 8.6 Hz), 4.09 (s, 2H), 4.04 (d, 2H, *J*= 5.8 Hz), 3.79 (s, 2H), 3.76 (s, 3H), 3.71 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): 170.1, 169.9, 159.5, 144.9, 144.0, 133.7, 130.3 (2C), 127.3, 125.9, 124.2, 124.0, 114.1 (2C), 59.5, 55.3, 54.9, 52.4, 41.1. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{19}H_{21}N_3O_6$ 388.1509, found 388.1502.

Methyl 2-(2-(butyl(2-nitrophenyl)amino)acetamido)acetate ***(23)****:* Orange oil, 904 mg, yield 56%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.79 (br s, 1H), 7.74 (d, 1H, *J*= 8.1 Hz), 7.50 (t, 1H, *J*= 7.8 Hz), 7.26 (d, 1H, *J*= 7.1 Hz), 7.15 (t, 1H, *J*= 7.7 Hz), 4.06 (d, 2H, *J*= 5.8 Hz), 3.88 (s, 2H), 3.70 (s, 3H), 3.01 (t, 2H, *J*= 7.7 Hz), 1.37-1.43 (m, 2H), 1.16-1.24 (m, 2H), 0.82 (t, 3H, *J*= 7.3 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 170.4, 169.9, 145.0, 144.0, 133.7, 125.8, 123.7 (2C), 56.4, 55.6, 52.4, 41.1, 29.1, 20.1, 13.9. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{15}H_{22}N_3O_5$ 324.1559, found 324.1548.

Methyl 2-(2-(cyclohexyl(2-nitrophenyl)amino)acetamido)acetate ***(24)****:* Red oil, 838 mg, yield 48%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.11 (br s, 1H), 7.73 (d, 1H, *J*= 8.0 Hz), 7.50 (t, 1H, *J*= 7.8 Hz), 7.28 (d, 1H, *J*= 8.2 Hz), 7.18 (t, 1H, *J*= 7.7 Hz), 4.01 (d, 2H, *J*= 5.7 Hz), 3.93 (s, 2H), 3.66 (s, 3H), 2.78-2.83 (m, 1H), 1.83 (d, 2H, *J*= 11.3 Hz), 1.76 (d, 2H, *J*= 12.6 Hz), 1.59 (d, 1H, *J*= 12.9 Hz), 1.13-1.31 (m, 4H), 1.01-1.06 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$): 171.4, 169.8, 145.9, 143.6, 133.3, 125.7, 124.6,

124.0, 66.1, 52.2, 50.4, 41.0, 29.7 (2C), 25.8 (2C), 25.5. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{17}H_{24}N_3O_5$ 350.1716, found 350.1708.

*Methyl 2-(2-(cyclopentyl(2-nitrophenyl)amino)acetamido)acetate (**25**):* Orange oil, 871 mg, yield 52%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.02 (br s, 1H), 7.73 (d, 1H, *J*= 8.0 Hz), 7.50 (t, 1H, *J*= 7.3 Hz), 7.29 (d, 1H, *J*= 8.2 Hz), 7.17 (t, 1H, *J*= 7.7 Hz), 4.01 (d, 2H, *J*= 5.8 Hz), 3.88 (s, 2H), 3.67 (s, 3H), 3.38-3.45 (m, 1H), 1.74-1.77 (m, 2H), 1.62-1.63 (m, 2H), 1.42-1.48 (m, 4H); ^{13}C NMR (125 MHz, $CDCl_3$): 171.2, 169.8, 145.8, 144.6, 133.6, 125.7, 124.6, 124.2, 68.3, 52.3, 52.0, 41.0, 28.9 (2C), 23.5 (2C). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{16}H_{22}Cl_2N_3O_5$ 336.1559, found 336.1550.

*Methyl 2-(2-((cyclopropylmethyl)(2-nitrophenyl)amino)-3-phenylpropanamido)acetate (**26**):* Brown oil, 1315 mg, yield 64%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.67 (d, 1H, *J*= 8.0 Hz), 7.41 (br s, 1H), 7.28 (t, 1H, *J*= 7.5 Hz), 7.07-7.15 (m, 5H), 7.03 (d, 2H, *J*= 7.0 Hz), 3.98-4.13 (m, 3H), 3.74 (s, 3H), 3.33 (dd, 1H, J_1= 14.2 Hz, J_2= 7.2 Hz), 3.26 (dd, 1H, J_1= 13.4 Hz, J_2= 5.8 Hz), 2.94 (dd, 1H, J_1= 14.2 Hz, J_2= 6.7 Hz), 2.76 (dd, 1H, J_1= 13.4 Hz, J_2= 7.1 Hz), 0.67-0.74 (m, 1H), 0.32-0.42 (m, 2H), 0.06-0.11 (m, 1H), 0.01-0.03 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$): 172.2, 170.1, 147.8, 142.8, 138.3, 132.4, 129.1 (2C), 128.4 (2C), 126.9, 126.5, 124.8, 124.7, 70.0, 55.5, 52.4, 41.3, 35.9, 9.5, 4.3, 3.9. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{22}H_{26}N_3O_5$ 412.1872, found 412.1864.

*Methyl 2-(2-(benzo[d][1,3]dioxol-5-yl)-2-((2-nitrophenyl) (3,4,5-trifluorobenzyl)amino) acetamido) acetate (**27**):* Orange oil, 1354 mg, yield 51%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.65 (d, 1H, *J*= 8.0 Hz), 7.47 (br s, 1H), 7.38 (t, 1H, *J*= 7.7 Hz), 7.20 (t, 1H, *J*= 7.8 Hz), 7.03 (d, 1H, *J*= 8.1 Hz), 6.93 (s, 1H), 6.83 (d, 1H, *J*= 8.0 Hz), 6.72 (d, 1H, *J*= 8.0 Hz), 6.59 (t, 2H, *J*= 7.1 Hz),5.93 (s, 2H), 4.86 (s, 1H), 4.24 (d, 1H, *J*= 14.4 Hz),4.03-4.10 (m, 2H), 3.94 (dd, 1H, J_1= 18.1 Hz, J_2= 5.3 Hz), 3.69 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): 170.8, 169.9, 152.0 (ddd, J_1= 250.3 Hz, J_2= 10.5 Hz, J_3= 3.8 Hz), 148.2, 148.1, 147.6, 140.3 (dt, J_1= 251.8 Hz, J_2= 15.5 Hz), 132.9, 132.0 (dd, J_1= 16.7 Hz, J_2= 6.0 Hz), 128.4, 127.3, 126.1, 125.1, 123.3, 113.5 (dd, J_1= 16.4 Hz, J_2= 5.4 Hz), 109.2, 108.5, 101.5, 71.5, 55.5, 52.5, 41.2. ^{19}F (188 MHz, $CDCl_3$): -133.98 (m, 2F), -161.16 (m, 1F). HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{25}H_{20}F_3N_3O_7Na$ 554.1146, found 554.1132.

^{1}H and ^{13}C NMR data for amines 1-27

*2-((4-aminophenyl)(4-methoxybenzyl)amino)-N-(tert-butyl)-2-(4-chlorophenyl) acetamide (**1a**):* Yellow oil, 83 mg, yield 92%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.24-7.28 (m, 4H), 6.88 (d, 2H, *J* = 8.4 Hz), 6.74 (d, 2H, *J* = 8.4 Hz), 6.70 (d, 2H, *J* = 8.5 Hz), 6.53 (d, 2H, *J* = 8.5 Hz), 4.76 (s, 1H), 4.10 (d, 1H, *J* = 14.6 Hz), 3.94 (d, 1H, *J* = 14.6 Hz), 3.76 (s, 3H), 1.20 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$): 170.2, 158.8, 141.9, 140.6, 135.4, 133.6, 130.5 (2C), 129.8 (2C), 129.6, 128.6 (2C), 123.7 (2C), 115.9 (2C), 113.6 (2C), 72.0, 55.8, 55.3, 51.0, 28.6 (3C). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{26}H_{31}ClN_3O_2$ 452.2105, found 452.2100.

*N-benzyl-2-(cyclohexyl(2-nitrophenyl)amino)-3-methylbutanamide (**2a**):* Yellow oil, 69 mg, yield 91%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.20-7.24 (m, 2H), 7.13 (m, 2H), 7.02 (t, 1H, *J*= 6.3 Hz), 6.87 (t, 1H, *J*= 7.6 Hz),6.82 (d, 1H, *J*= 7.5 Hz), 6.74 (t, 1H, *J*= 7.5 Hz), 6.62 (d, 1H, *J*= 7.8 Hz), 4.51 (dd, 1H, J_1= 14.9 Hz, J_2= 6.3 Hz), 4.32 (dd, 1H, J_1= 14.9 Hz, J_2= 5.6 Hz), 3.64 (d, 1H, *J*= 4.7 Hz), 2.33-2.40 (m, 1H), 1.06 (m, 6H); ^{13}C NMR (125 MHz, $CDCl_3$): 172.9, 138.4, 137.7, 128.7 (2C), 127.8 (2C), 127.4, 122.8, 120.0, 118.7, 113.5, 65.2, 43.2, 31.6, 19.9, 18.2. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{24}H_{34}N_3O$ 380.2702, found 380.2695.

*2-((2-aminophenyl)(propyl)amino)-N-cyclohexylbutanamide (**3a**):* Yellow oil, 59 mg, yield 93%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.05 (d, 1H, *J*= 7.8 Hz), 6.95 (t, 1H, *J*= 7.5 Hz), 6.70-6.74 (m, 2H), 5.95 (br s, 1H), 4.12 (br s, 2H), 3.75 (m, 1H), 3.34 (br t, 1H), 2.96 (q, 1H, *J*= 7.2 Hz), 1.85 (d, 1H, *J*= 11.0 Hz), 1.56-1.76 (m, 6H), 1.33 (m, 4H, *J*= 12.0 Hz), 1.00-1.14 (m, 4H), 0.89 (t, 3H, *J*= 7.4 Hz), 0.80 (t, 3H, *J*= 7.3 H); ^{13}C NMR (125 MHz, $CDCl_3$): 171.3, 143.6, 135.1, 125.8, 124.5, 118.7, 115.8, 68.8, 52.1, 47.8, 33.4, 33.0, 25.6, 24.95, 24.92, 23.3, 20.5, 11.9, 10.6. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{19}H_{32}N_3O$ 318.2545, found 318.2538.

*2-((4-aminophenyl)(benzyl)amino)-N-(2,5-dichlorophenyl)-4-methylpentanamide (**4a**):* Yellow oil, 80 mg, yield 89%; Mixture of topoisomers in ratio ca.97/3; ^{1}H NMR (500 MHz, $CDCl_3$): 9.35 (s, 1H), 8.54 (s, 1H), 8.54 (d, 1H, *J*= 2.2 Hz), 7.30 (d, 2H, *J*= 7.3 Hz), 7.23-7.26 (m, 3H), 7.18 (t, 1H, *J*= 7.1 Hz), 6.98 (dd, 1H, J_1= 8.5 Hz, J_2= 2.4 Hz), 6.82 (d, 2H, *J* = 8.6 Hz), 6.59 (d, 2H, *J* = 8.6 Hz), 4.32 (s, 2H), 4.06 (t, 1H, *J*= 6.5 Hz), 1.92 (q, 1H, *J*= 6.9 Hz), 1.76 (q, 1H, *J*= 6.6 Hz), 1.57 (q, 1H, *J*= 7.0 Hz), 0.89 (d, 3H, *J*= 6.6 Hz), 0.86 (d, 3H, *J*= 6.6 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 172.3, 141.1, 140.2, 138.1, 135.7, 133.6, 129.8, 128.5 (2C), 128.3 (2C), 127.2, 124.3, 121.6 (2C), 120.9, 120.8, 116.3 (2C), 66.1, 54.4, 37.7, 25.9, 22.9, 22.6. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{25}H_{28}Cl_2N_3O$ 455.1531, found 456.1603.

*2-((4-aminophenyl)(4-methoxybenzyl)amino)-2-(4-chlorophenyl)-N-cyclohexylacetamide (**5a**):* Yellow oil, 86 mg, yield 90%; ^{1}H NMR (500 MHz, $CDCl_3$): 6.86 (d, 3H, *J* = 8.0 Hz), 6.69-6.77 (m,

7H), 6.53 (d, 2H, *J* = 7.9 Hz), 4.83 (s, 1H), 4.09 (d, 1H, *J* = 14.5 Hz), 3.95 (d, 1H, *J* = 14.5 Hz), 3.76 (s, 3H), 3.65-3.69 (m, 1H), 1.53-1.76 (m, 4H), 1.44 (s, 1H), 1.22-1.34 (m, 3H), 1.12-1.17 (m, 1H), 0.92-1.06 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$): 170.1, 158.8, 142.0, 140.5, 135.4, 133.7, 130.5 (2C), 129.9 (2C), 129.4, 128.6 (2C), 123.7 (2C), 115.9 (2C), 113.6 (2C), 71.2, 55.9, 55.3, 50.9, 47.8, 33.0, 30.4, 25.6, 24.7. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{28}H_{33}ClN_3O_2$ 478.2261, found 478.2254.

2-((2-aminophenyl)(4-methoxybenzyl)amino)-N-(tert-butyl)-2-(4-chlorophenyl)acetamide ***(6a)****:* Yellow oil, 81 mg, yield 90%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.53 (d, 2H, *J* = 7.4 Hz), 7.37 (d, 2H, *J* = 7.6 Hz), 6.99 (d, 1H, *J* = 7.6 Hz), 6.94 (t, 1H, *J* = 7.6 Hz), 6.74 (d, 2H, *J* = 7.8 Hz), 6.68 (d, 3H, *J* = 8.5 Hz), 6.59 (d, 1H, *J* = 7.8 Hz), 6.46 (s, 1H), 4.63 (s, 1H), 3.90 (d, 1H, *J* = 12.3 Hz), 3.77 (d, 1H, *J* = 12.3 Hz), 3.73 (s, 3H),1.02 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$): 169.8, 159.1, 143.6, 137.0, 134.8, 133.9, 131.1 (2C), 129.7 (2C), 129.0 (2C), 128.5, 126.6, 125.1, 119.3, 115.6, 113.5 (2C), 73.6, 56.1, 55.3, 51.1, 28.3 (3C). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{26}H_{31}ClN_3O_2$ 452.2403, found 452.2093.

2-((2-aminophenyl)(3-methoxybenzyl)amino)-N-(tert-butyl)-2-(4-chlorophenyl)acetamide ***(7a)****:* Yellow oil, 83 mg, yield 92%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.52 (d, 2H, *J* = 8.1 Hz), 7.37 (d, 2H, *J* = 8.1 Hz), 7.08 (t, 1H, *J* = 7.9 Hz), 7.00 (d, 1H, *J* = 7.6 Hz), 6.94 (t, 1H, *J* = 7.8 Hz), 6.74 (dd, 1H, J_1 = 8.2 Hz, J_2 = 2.4 Hz), 6.69 (t, 1H, *J* = 7.5 Hz), 6.60 (d, 1H, *J* = 7.8 Hz), 6.48 (m, 2H), 6.31 (br s, 1H), 4.65 (s, 1H), 3.92 (d, 1H, *J* = 12.8 Hz), 3.71 (d, 1H, *J* = 14.3 Hz), 3.61 (s, 3H), 1.04 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$): 169.8, 159.3, 143.5, 138.0, 136.8, 134.8, 134.0, 129.8 (2C), 129.1, 129.0 (2C), 126.7, 125.0, 122.1, 119.2, 115.6, 115.2, 113.4, 56.5, 55.1, 51.1, 50.8, 28.3 (3C). HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{26}H_{30}ClN_3O_2Na$ 474.1924, found 474.1920.

2-(3-aminophenyl)-N-(4-bromobenzyl)-2-(N-cycloheptylacetamido)acetamide ***(8a)****:* Yellow oil, 78 mg, yield 84%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.39 (d, 2H, *J*= 8.2 Hz), 7.13 (d, 2H, *J*= 8.2 Hz), 7.09 (t, 1H, *J*= 7.8 Hz), 6.72 (s, 1H), 6.68 (d, 1H, *J*= 7.5 Hz), 6.59 (d, 1H, *J*= 7.8 Hz), 6.46 (t, 1H, *J* = 6.4 Hz), 4.71 (br s, 2H), 4.40 (dd, 1H, J_1= 15.3 Hz, J_2= 6.2 Hz), 4.30 (dd, 1H, J_1= 15.3 Hz, J_2= 5.6 Hz), 3.79 (br t, 1H, *J*= 9.9 Hz), 2.21 (s, 3H), 2.10-2.16 (m, 1H), 1.91-1.93 (m, 1H), 1.74-1.76 (m, 1H), 1.45-1.63 (m, 9H), 1.32-1.34 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$): 170.72, 170.65, 170.57, 147.1, 138.5, 137.7, 137.7, 131.6 (2C), 129.8, 129.3 (2C), 125.6, 121.0, 118.5, 114.9, 114.6, 63.5, 61.8, 43.1, 43.0, 33.9, 33.7, 30.4, 29.8, 27.6, 27.5, 25.6, 25.5, 22.9. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{24}H_{31}BrN_3O_2$ 472.1600, found 472.1593.

N-((1s,3s)-adamantan-1-yl)-2-(4-aminophenyl)-2-(N-cyclopentylformamido)acetamide ***(9a)****:* Yellow oil, 69 mg, yield 88%; Mixture of topoisomers a and b in ratio a/b=3/1: ^{1}H NMR (500 MHz, $CDCl_3$): 8.34 (s, 1H, a), 8.06 (s, 1H, b), 7.13 (d, 2H, *J*= 8.1 Hz, a), 7.03 (d, 2H, *J*= 8.1 Hz, b), 6.65 (d, 4H, *J* = 8.1 Hz, a and b), 5.68 (s, 1H, a), 5.52 (s, 1H, b), 5.43 (s, 1H, a), 4.81 (s, 1H, b), 4.47 (q, 1H, *J*= 8.3 Hz, b), 3.82 (q, 1H, *J*= 8.4 Hz, a), 3.46 (s, 1H, a), 2.21 (s, 1H, b), 2.10-2.15 (m, 1H, a and b), 2.05

(d, 8H, *J*= 17.8 Hz, b), 1.98 (d, 8H, *J*= 12.0 Hz, a), 1.75-1.81 (m, 4H, a and b), 1.65 (d, 16H, *J*= 12.2 Hz, a and b), 1.50-1.58 (m, 4H, a and b), 1.40-1.44 (m, 2H, a and b), 1.24-1.32 (m, 4H, a and b); ^{13}C NMR (125 MHz, $CDCl_3$): 168.9 (b), 168.8 (a), 164.1 (b), 162.7 (a), 146.8 (b), 146.5 (a), 129.9 (2C, a), 129.5 (2C, b), 125.7 (b), 125.5 (a), 115.4 (2C, b), 115.2 (2C, a), 62.9 (a and b), 60.5 (a), 58.5 (a), 54.8 (b), 52.7 (b), 52.3 (a), 41.5 (3C, b), 41.4 (3C, a), 36.4 (3C, a), 33.1 (a), 32.7 (a), 29.5 (3C, a and b), 24.3 (a), 36.3 (3C, b), 30.8 (b), 30.4 (b), 29.1 (b), 24.2 (2C, a and b), 24.1 (b). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{24}H_{34}N_3O_2$ 396.2651, found 396.2647.

*N-(2-((4-amino-2-methoxyphenyl)amino)-2-oxoethyl)-N-benzyl-2-(4-chlorophenyl) acetamide (**10a**):* Yellow oil, 79 mg, yield 90%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.17 (s, 1H),7.98 (d, 1H, *J*= 8.2 Hz), 7.35 (t, 2H, *J*= 8.2 7.4 Hz), 7.24-7.27 (m, 3H), 7.19 (d, 2H, *J*= 8.2 Hz), 7.14 (d, 2H, *J*= 7.2 Hz), 6.31 (d, 2H, *J*= 10.0 Hz), 4.69 (s, 2H), 3.99 (br s, 1H), 3.78 (s, 2H), 3.73-3.75 (m, 5H); ^{13}C NMR (125 MHz, $CDCl_3$): 172.1, 171.8, 166.1, 149.6, 143.5, 135.7, 133.1, 130.4 (2C), 129.2 (2C), 129.0 (2C), 128.1, 126.7 (2C), 121.7, 119.1, 107.0, 98.5, 55.7, 52.7, 51.1, 39.8. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{24}H_{25}ClN_3O_3$ 438.1584, found 438.1580.

*4-(((4-methoxybenzyl)amino)(1-(2,4,4-trimethylpentan-2-yl)-1H-tetrazol-5-yl)methyl) aniline (**11a**):* Yellow oil, 78 mg, yield 92%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.24 (d, 2H, *J*= 8.3 Hz), 7.10 (d, 2H, *J*= 8.2 Hz), 6.85 (d, 2H, *J* = 8.3 Hz), 6.63 (d, 2H, *J* = 8.2 Hz), 5.14 (s, 1H), 3.79 (s, 3H), 3.68 (d, 2H, *J*= 5.5 Hz), 3.30 (br s, 2H), 1.79 (d, 1H, *J*= 15.0 Hz), 1.72 (d, 1H, *J*= 15.1 Hz), 1.62 (s, 3H), 1.59 (s, 3H), 0.61 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$): 159.0, 156.1, 146.7, 131.2, 129.7 (4C), 128.1, 115.4 (2C), 114.4 , 114.0 (2C), 65.1, 56.9, 55.4, 53.5, 50.4, 31.5, 30.6 (3C), 30.5, 30.0. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{24}H_{36}N_6O$ 423.2872, found 423.2868.

*2-((1-(tert-butyl)-1H-tetrazol-5-yl)(isopropylamino)methyl)-4-chloroaniline (**12a**):* Light yellow solid, 60 mg, yield 94%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.05 (dd, 1H, ^1J = 8.4 Hz, ^2J = 2.5 Hz), 6.68 (d, 1H, *J*= 8.4 Hz), 6.21 (d, 1H, *J*= 2.6 Hz), 5.45 (s, 1H), 2.62-2.70 (m, 1H), 1.59 (s, 9H),1.13 (d, 3H, *J*= 6.1 Hz),1.07 (d, 3H, *J*= 6.2 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 154.7, 144.2, 129.1, 127.4, 126.2, 123.5, 118.4, 61.7, 52.8, 46.7, 30.0 (3C), 23.8, 21.6. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{15}H_{24}ClN_6$ 323.1751, found 323.1745.

*Methyl 2-(5-((3-aminophenyl)(p-tolylamino)methyl)-1H-tetrazol-1-yl)acetate (**13a**):* Yellow oil, 64 mg, yield 91%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.10 (t, 1H, *J* = 7.7 Hz), 6.95 (d, 2H, *J* = 7.5 Hz), 6.67 (d, 1H, *J*= 7.5 Hz), 6.60 (d, 2H, *J*= 11.0 Hz), 6.54 (d, 2H, *J*= 8.1 Hz), 5.84 (s, 1H), 5.12 (d, 1H, *J*= 17.6 Hz), 5.03 (d, 1H, *J*= 17.6 Hz), 3.56 (s, 3H), 2.20 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): 166.0, 156.2, 147.4, 143.6, 138.0, 130.3, 129.9, 128.8, 117.0, 115.7, 114.2, 113.5, 54.5, 53.1, 48.7, 20.5. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{18}H_{21}N_6O_2$ 353.1726, found 353.1719.

*2-(5-(1-(cyclopentylamino)-3-methylbutyl)-1H-tetrazol-1-yl)-5-methoxyaniline (**14a**):* Yellow oil, 63 mg, yield 92%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.23 (s, 1H), 7.00 (d, 1H, *J*= 8.6 Hz), 6.96 (d, 1H, *J*= 2.5 Hz), 6.54 (dd, 1H, ^{1}J = 8.6 Hz, ^{2}J = 2.5 Hz), 4.03 (d, 1H, *J*= 6.6 Hz), 3.87 (s, 3H), 3.06 (t, 1H, *J*= 6.5 Hz), 1.47-1.77 (m, 11H), 0.76 (d, 3H, *J*= 6.6 Hz), 0.74 (d, 3H, *J*= 6.6 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 162.7, 157.9, 148.0, 128.5, 112.3, 107.0, 100.5, 57.3, 55.8, 49.8, 41.9, 33.3, 32.7, 25.2, 23.97, 23.95, 22.9, 21.9. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{18}H_{29}N_6O$ 345.2346, found 345.2344.

*N^1-(1-(1-benzyl-1H-tetrazol-5-yl)cyclohexyl)-6-methylbenzene-1,3-diamine (**15a**):* Yellow oil, 64 mg, yield 89%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.28 (t, 3H, *J*= 7.8 Hz), 7.08 (d, 2H, *J*= 4.9 Hz), 6.88 (d, 1H, *J*= 7.8 Hz), 6.06 (d, 1H, *J*= 7.8 Hz), 5.65 (s, 2H), 5.17 (s, 1H), 3.90 (s, 1H), 3.17 (br s, 2H), 2.19 (s, 3H), 1.97-2.08 (m, 4H), 1.59-1.66 (m, 4H), 1.32-1.36 (m, 2H); ^{13}C NMR (125 MHz, $CDCl_3$): 159.6, 145.6, 142.5, 135.1, 131.6, 128.9 (2C), 128.5, 127.6 (2C), 113.0, 105.9, 100.4, 54.2, 52.1, 34.0, 30.5, 24.9, 21.1 (2C), 17.0. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{21}H_{28}N_6$ 363.2297, found 363.2286.

*Methyl 2-(((2-amino-5-chlorophenyl)(1-(tert-butyl)-1H-tetrazol-5-yl)methyl)amino)-2-methylpropanoate (**16a**):* Light yellow solid, 69 mg, yield 91%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.35 (d, 1H, *J* = 8.5 Hz), 7.24 (d, 1H, *J* = 8.6 Hz), 6.41 (s, 1H), 5.60 (s, 1H), 3.58 (s, 3H), 1.58 (s, 9H), 1.44 (s, 3H), 1.20 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): 176.2, 155.3, 146.5, 129.4, 127.3, 126.6, 126.4, 116.1, 61.9, 58.5, 52.5, 49.6, 29.9 (3C), 26.14, 26.08. HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{17}H_{25}ClN_6O_2Na$ 403.1620, found 403.1624.

*Methyl 3-(((4-aminophenyl)(1-(tert-butyl)-1H-tetrazol-5-yl)methyl)amino)propanoate (**17a**):* Light yellow solid, 59 mg, yield 90%; ^{1}H NMR (500 MHz, $CDCl_3$): 6.98 (d, 2H, *J* = 8.2 Hz), 6.56 (d, 2H, *J* = 8.3 Hz), 5.17 (s, 1H), 3.60 (s, 3H), 2.71-2.81 (m, 2H), 2.45 (t, 2H, *J* = 6.7 Hz), 1.57 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$): 172.8, 155.9, 146.7, 129.1 (2C), 127.9, 115.2 (2C), 61.3, 58.6, 51.6, 43.1, 34.8, 29.9 (3C). HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{16}H_{24}N_6O_2Na$ 355.1853, found 355.1852.

*Methyl 2-(((4-aminophenyl)(1-(tert-butyl)-1H-tetrazol-5-yl)methyl)amino)propanoate (**18a**):* Yellow oil, 59 mg, yield 89%; Mixture of diastereomers a and b in ratio d.r.=65/35: ^{1}H NMR (500 MHz, $CDCl_3$): 7.06 (d, 2H, *J* = 6.6 Hz, a), 7.01 (d, 2H, *J* = 6.5 Hz, b), 6.56- 6.60 (m, 4H, a and b), 5.38 (s, 1H, a), 5.36 (s, 1H, b), 3.66 (s, 3H, a), 3.62 (s, 3H, b), 3.29-3.33 (m, 1H, a), 2.76-2.79 (m, 1H, b), 1.61 (s, 9H, a), 1.54 (s, 9H, b), 1.22-1.33 (m, 6H, *J* = 5.6 Hz, a and b); ^{13}C NMR (125 MHz, $CDCl_3$): 175.1 (b), 174.8 (a), 155.8 (a), 155.6 (b), 147.3 (b), 146.7 (a), 129.8 (2C, a), 129.5 (2C, b), 127.9 (b), 127.2 (a), 115.5 (4C, a and b), 61.5 (a and b), 56.9 (b), 55.9 (a), 54.6 (b), 53.2 (a), 52.1 (a and b), 30.1 (3C, a), 30.0 (3C, b), 18.9 (a and b). HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{16}H_{24}N_6O_2Na$ 355.1853, found 355.1852.

*Methyl 2-(((4-aminophenyl)(1-(tert-butyl)-1H-tetrazol-5-yl)methyl)amino)-4-methyl pentanoate (**19a**):* Light yellow solid, 69 mg, yield 92%; Mixture of diastereomers a and b in ratio d.r.=70/30: ^{1}H

NMR (500 MHz, $CDCl_3$): 7.13 (d, 2H, *J* = 6.7 Hz, a), 7.04 (d, 2H, *J* = 6.7 Hz, b), 6.58-6.62 (m, 4H, a and b), 5.32 (s, 1H, a), 5.31 (s, 1H, b), 3.67 (s, 3H, a), 3.61 (s, 3H, b), 3.22-3.25 (m, 2H, a and b), 1.69-1.76 (m, 2H, a and b), 1.64 (s, 9H, a), 1.57 (s, 9H, b), 1.46-1.54 (m, 4H, a and b), 0.85-0.88 (m, 6H, b), 0.84 (d, 3H, *J* = 6.6 Hz, a), 0.68 (d, 3H, *J* = 6.4 Hz, a); ^{13}C NMR (125 MHz, $CDCl_3$): 175.5 (b), 175.3 (a), 156.0 (a), 155.6 (b), 146.8 (a), 146.7 (b), 129.8 (a), 129.5 (b), 129.1 (b), 127.3 (a), 115.3 (a and b), 61.40 (a), 61.37 (b), 58.2 (b), 51.7 (b), 56.5 (a), 56.2(a), 51.93(a), 51.89 (b), 42.8 (b), 42.2 (a), 30.1 (3C, a), 30.0 (3C, b), 28.84 (b), 28.77 (a), 24.8 (b), 24.7 (a), 23.1 (a), 23.0 (b), 22.3 (b), 21.6 (a). HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{19}H_{30}N_6O_2Na$ 397.2322, found 397.2321.

*Methyl 2-(((4-aminophenyl)(1-(tert-butyl)-1H-tetrazol-5-yl)methyl)amino)-3-methylbutanoate (**20a**):* Light yellow solid, 67 mg, yield 93%; Mainly the one diastereomer in ratio *d.r*. =99/1; ^{1}H NMR (500 MHz, $CDCl_3$): 7.11 (d, 2H, *J* = 8.3 Hz), 6.62 (d, 2H, *J* = 8.2 Hz), 5.25 (s, 1H), 3.66 (s, 3H), 2.97 (d, 1H, *J* = 5.9 Hz), 1.91-1.98 (m, 1H), 1.63 (s, 9H), 0.91 (d, 3H, *J* = 6.8 Hz), 0.87 (d, 3H, *J* = 6.8 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 174.5, 156.2, 146.6, 129.9 (2C), 127.6, 115.3 (2C), 64.58, 61.41, 56.93, 51.71, 31.6, 30.1 (3C), 19.3, 18.6. HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{18}H_{28}N_6O_2Na$ 383.2166, found 383.2166.

*Methyl 2-(2-((2-aminophenyl)(4-chlorobenzyl)amino)acetamido)acetate (**21a**):* Pale red oil, 71 mg, yield 99%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.24 (d, 2H, *J*= 8.2 Hz), 7.11 (d, 2H, *J*= 8.1 Hz), 6.96 (t, 1H, *J*= 7.3 Hz), 6.92 (d, 1H, *J*= 7.8 Hz), 6.68-6.73 (m, 2H), 4.08 (s, 2H), 3.98 (d, 2H, *J*= 5.2 Hz), 3.73 (s, 3H), 3.67 (s, 2H); ^{13}C NMR (125 MHz, $CDCl_3$): 170.49, 170.47, 141.9, 135.9, 135.1, 133.6, 130.7 (2C), 128.7 (2C), 126.2, 123.0, 119.1, 116.2, 58.1, 56.9, 52.5, 41.0. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{18}H_{21}ClN_3O_3$ 362.1271, found 362.1268.

*Methyl 2-(2-((2-aminophenyl)(4-methoxybenzyl)amino)acetamido)acetate (**22a**):* Pale red oil, 70 mg, yield 98%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.31 (br t, 1H), 7.10 (d, 2H, *J*= 8.2 Hz), 6.94- 6.97 (m, 2H), 6.81 (d, 2H, *J*= 8.1 Hz), 6.70- 6.74 (m, 2H), 4.02 (s, 2H), 3.96 (d, 2H, *J*= 5.1 Hz), 3.78 (s, 3H), 3.73 (s, 3H), 3.69 (s, 2H); ^{13}C NMR (125 MHz, $CDCl_3$): 170.7, 170.5, 159.2, 142.1, 136.5, 130.7 (2C), 128.8, 126.1, 123.2, 119.1, 116.1, 113.9 (2C), 58.8, 56.9, 55.4, 52.5, 41.1. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{19}H_{24}N_3O_4$ 358.1767, found 358.0937.

*Methyl 2-(2-((2-aminophenyl)(butyl)amino)acetamido)acetate (**23a**):* Pale red oil, 57 mg, yield 97%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.44 (br s, 1H), 7.06 (d, 1H, *J*= 8.2 Hz), 6.96 (t, 1H, *J*= 7.6 Hz), 6.71- 6.75 (m, 2H), 4.06 (d, 2H, *J*= 5.3 Hz), 3.74 (s, 2H), 3.65 (s, 3H), 2.95 (t, 2H, *J*= 7.7 Hz), 1.42-1.47 (m, 2H), 1.27-1.37 (m, 2H), 0.87 (t, 3H, *J*= 7.3 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 171.2, 170.6, 142.4, 136.6, 125.9, 122.7, 119.0, 116.1, 58.5, 55.1, 52.4, 41.0, 29.5, 20.5, 14.1. HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{15}H_{24}N_3O_3Na$ 316.1632, found 316.1615.

*Methyl 2-(2-((2-aminophenyl)(cyclohexyl)amino)acetamido)acetate (**24a**):* Pale red oil, 63 mg, yield 99%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.53 (br s, 1H), 7.04 (d, 1H, *J*= 7.8 Hz), 6.96 (t, 1H, *J*= 7.6 Hz), 6.71- 6.76 (m, 2H), 3.97 (d, 2H, *J*= 5.1 Hz), 3.78 (s, 2H), 3.70 (s, 3H), 2.73-2.78 (m, 1H), 1.90 (d, 2H, *J*= 11.4 Hz), 1.77 (d, 2H, *J*= 12.9 Hz), 1.60 (d, 1H, *J*= 12.6 Hz),1.15-1.35 (m, 4H), 1.04-1.09 (m, 1H); ^{13}C NMR (125 MHz, $CDCl_3$): 172.0, 170.5, 142.9, 136.1, 125.9, 125.0, 118.9, 116.2, 62.4, 53.1, 52.4, 41.1, 30.2 (2C), 25.9 (3C). HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{17}H_{26}N_3O_3Na$ 342.1788, found 342.1771.

*Methyl 2-(2-((2-aminophenyl)(cyclopentyl)amino)acetamido)acetate (**25a**):* Pale red oil, 60 mg, yield 98%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.57 (br s, 1H), 7.10 (d, 1H, *J*= 8.1 Hz), 6.97 (t, 1H, *J*= 7.5 Hz), 6.73- 6.74 (m, 2H), 3.98 (d, 2H, *J*= 5.2 Hz), 3.75 (s, 2H), 3.71 (s, 3H), 3.43-3.47 (m, 1H), 1.73-1.77 (m, 2H), 1.62-1.65 (m, 2H), 1.45-1.53 (m, 4H); ^{13}C NMR (125 MHz, $CDCl_3$): 171.7, 170.5, 143.3, 137.2, 126.3, 124.9, 119.3, 116.1, 66.3, 56.4, 52.4, 41.1, 29.8 (2C), 23.8 (2C). HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{16}H_{24}N_3O_3$ 328.1632, found 328.1614.

*Methyl 2-(2-((2-aminophenyl)(3,4,5-trifluorobenzyl)amino)-2-(benzo[d][1,3]dioxol-5-yl)acetamido)acetate (**27a**):* Pale red oil, 97 mg, yield 97%; ^{1}H NMR (500 MHz, $CDCl_3$): 6.89-6.93 (m, 2H), 6.84 (d, 1H, *J*= 7.8 Hz), 6.75-6.79 (m, 3H), 6.65-6.70 (m, 3H), 6.60 (t, 1H, *J*= 7.5 Hz), 5.97 (s, 2H), 4.74 (s, 1H), 4.16 (d, 1H, *J*= 13.6 Hz), 3.93-4.00 (m, 2H), 3.87 (d, 1H, *J*= 13.7 Hz), 3.71 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$): 171.4, 170.3, 151.8 (ddd, J_1= 250.0 Hz, J_2= 10.2 Hz, J_3= 2.8 Hz), 148.3, 148.1, 142.9, 140.0 (dt, J_1= 250.2 Hz, J_2= 14.5 Hz), 134.0 (dd, J_1= 17.2 Hz, J_2= 5.6 Hz), 133.5, 130.5, 129.5, 126.4, 124.4, 119.7, 113.5 (dd, J_1= 16.7 Hz, J_2= 4.5 Hz), 109.1, 108.5, 101.4, 70.8, 66.2, 52.6, 41.3. HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{25}H_{23}F_3N_3O_5Na$ 524.1404, found 524.1374.

^{1}H and ^{13}C NMR data for dihydroquinoxalin-2-ones 21b-27b

*4-(4-chlorobenzyl)-3,4-dihydroquinoxalin-2(1H)-one (**21b**):* Yellow oil, 53 mg, yield 97%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.57 (br s, 1H), 7.32 (d, 2H, *J* = 8.3 Hz,), 7.25 (d, 2H, *J* = 8.3 Hz), 6.92-6.95 (m, 1H), 6.79 (d, 2H, *J* = 4.1 Hz), 6.70, (d, 1H, *J* = 8.0 Hz), 4.37 (s, 2H), 3.80 (s, 2H); ^{13}C NMR (125 MHz, $CDCl_3$): 166.9, 135.1, 135.0, 133.5, 129.2 (2C), 129.0 (2C), 126.3, 124.4, 119.5, 115.8, 112.5, 53.2, 52.5. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{15}H_{14}ClN_2O$ 273.0795, found 273.0788.

*4-(4-methoxybenzyl)-3,4-dihydroquinoxalin-2(1H)-one (**22b**):* Yellow oil, 49 mg, yield 92% ; ^{1}H NMR (500 MHz, $CDCl_3$): 9.11 (br s, 1H), 7.23 (d, 2H, *J* = 8.2 Hz), 6.95 (t, 1H, *J* = 7.6 Hz), 6.88 (d, 2H, *J* = 8.2 Hz), 6.74-6.80 (m, 3H), 4.34 (s, 2H), 3.80 (s, 3H), 3.76 (s, 2H); ^{13}C NMR (125 MHz, $CDCl_3$): 167.5, 159.2, 135.5, 129.1 (2C), 128.2, 126.3, 124.3, 119.1, 115.8, 114.3 (2C), 112.3, 55.4, 53.0, 51.9. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{16}H_{17}N_2O_2$ 269.1290, found 269.1284.

*4-butyl-3,4-dihydroquinoxalin-2(1H)-one (**23b**):* Yellow oil, 37 mg, yield 89%; ^{1}H NMR (500 MHz, $CDCl_3$): 9.18 (br s, 1H), 6.97 (t, 1H, *J* = 7.5 Hz), 6.78 (d, 1H, *J* = 7.5 Hz), 6.72 (t, 1H, *J* = 7.5 Hz), 6.69 (d, 1H, *J* = 8.2 Hz), 3.86 (s, 2H), 3.22 (t, 2H, *J*= 7.4 Hz), 1.59-1.65 (m, 2H), 1.37-1.45 (m, 2H), 0.98 (t, 3H, *J* = 7.4 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 167.4, 135.2, 126.2, 124.3, 118.4, 115.8, 111.7, 52.3, 49.5, 27.3, 20.4, 14.0. HRMS (ESI) *m/z*: $[M+Na]^+$ calcd for $C_{12}H_{16}N_2ONa$ 227.1155, found 227.1147.

*4-cyclohexyl-3,4-dihydroquinoxalin-2(1H)-one (**24b**):* Yellow oil, 41 mg, yield 91%; ^{1}H NMR (500 MHz, $CDCl_3$): 7.37 (d, 1H, *J* = 7.4 Hz), 7.02 (t, 1H, *J* = 7.7 Hz), 6.84 (t, 1H, *J* = 7.3 Hz), 6.72 (d, 1H,*J* = 8.0 Hz), 3.89 (s, 2H), 3.46 (t, 1H, *J* = 9.4 Hz), 1.88 (d, 2H, *J* = 11.4 Hz), 1.82 (d, 2H, *J* = 10.2 Hz), 1.72 (d, 1H, *J* = 13.1 Hz), 1.35-1.47 (m, 4H), 1.11-1.18 (m, 1H);^{13}C NMR (125 MHz, $CDCl_3$): 161.4, 135.3, 127.4, 124.9, 118.7, 113.8, 112.1, 56.3, 46.4, 28.8 (2C), 26.0 (2C), 25.9. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{14}H_{19}N_2O$ 231.1497, found 231.1492.

*4-cyclopentyl-3,4-dihydroquinoxalin-2(1H)-one (**25b**):* Yellow oil, 41 mg, yield 95%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.40 (br s, 1H), 6.98-7.01 (m, 1H), 6.83 (d, 1H, *J* = 8.0 Hz), 6.75-6.79 (m, 2H), 4.09-4.15 (m, 1H), 3.72 (s, 2H), 1.95-1.97 (m, 2H), 1.73-1.75 (m, 2H), 1.60-1.69 (m, 4H); ^{13}C NMR (125 MHz, $CDCl_3$): 168.1, 136.2, 127.1, 124.2, 119.2, 115.7, 113.5, 58.4, 46.7, 27.8 (2C), 24.8 (2C). HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{13}H_{17}N_2O$ 217.1341, found 217.1334.

*3-benzyl-4-(cyclopropylmethyl)-3,4-dihydroquinoxalin-2(1H)-one (**26b**):* Yellow oil, 55 mg, yield 95%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.71 (br s, 1H), 7.17- 7.23 (m, 3H), 7.12 (d, 2H, *J* = 7.1 Hz), 7.01 (t, 1H, *J* = 7.9 Hz), 6.72- 6.78 (m, 3H), 4.39 (t, 1H, *J* = 6.4 Hz), 3.22 (dd, 1H, J_1 = 14.0 Hz, J_2 = 5.9 Hz), 2.83- 2.88 (m, 2H), 2.56 (dd, 1H, J_1 = 13.8 Hz, J_2 = 7.0 Hz), 0.84-0.89 (m, 1H), 0.49 (dd, 2H, J_1 = 20.0 Hz, J_2 = 8.2 Hz), 0.08 (d, 2H, *J* = 4.6 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 168.0, 136.4, 134.2,

129.7 (2C), 128.5 (2C), 126.8, 126.4, 124.3, 118.9, 115.5, 114.0, 63.1, 54.6, 36.2, 9.3, 5.0, 3.2. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{19}H_{21}N_2O$ 293.1654, found 293.1647.

3-(benzo[d][1,3]dioxol-5-yl)-4-(3,4,5-trifluorobenzyl)-3,4-dihydroquinoxalin-2(1H)-one ***(27b)****:* Yellow oil, 74 mg, yield 90%; ^{1}H NMR (500 MHz, $CDCl_3$): 8.67 (br s, 1H), 6.89-6.96 (m, 3H), 6.80-6.81 (m, 2H), 6.71 (d, 1H, *J* = 7.6 Hz), 6.64-6.67 (m, 2H), 6.56 (d, 1H, *J* = 8.0 Hz), 5.91 (s, 2H), 4.86 (s, 1H), 4.51 (d, 1H, *J* = 16.0 Hz), 4.10 (d, 1H, *J* = 16.0 Hz); ^{13}C NMR (125 MHz, $CDCl_3$): 166.5, 152.7 (ddd, J_1= 251.0 Hz, J_1= 10.0 Hz, J_1= 3.9 Hz), 148.4, 148.2, 140.2 (dt, J_1= 251.3 Hz, J_2= 15.2 Hz), 133.3 (dd, J_1= 6.4 Hz, J_2= 2.3 Hz), 133.2, 130.5, 125.4, 124.8, 121.0, 119.8, 115.9, 112.5, 111.3 (dd, J_1= 16.5 Hz, J_2= 5.1 Hz), 108.7, 107.4, 101.4, 66.1, 51.2. HRMS (ESI) *m/z*: $[M+H]^+$ calcd for $C_{22}H_{16}F_3N_2O_3$ 413.1113, found 413.1107.

Copies of ^{1}H and ^{13}C NMR spectra

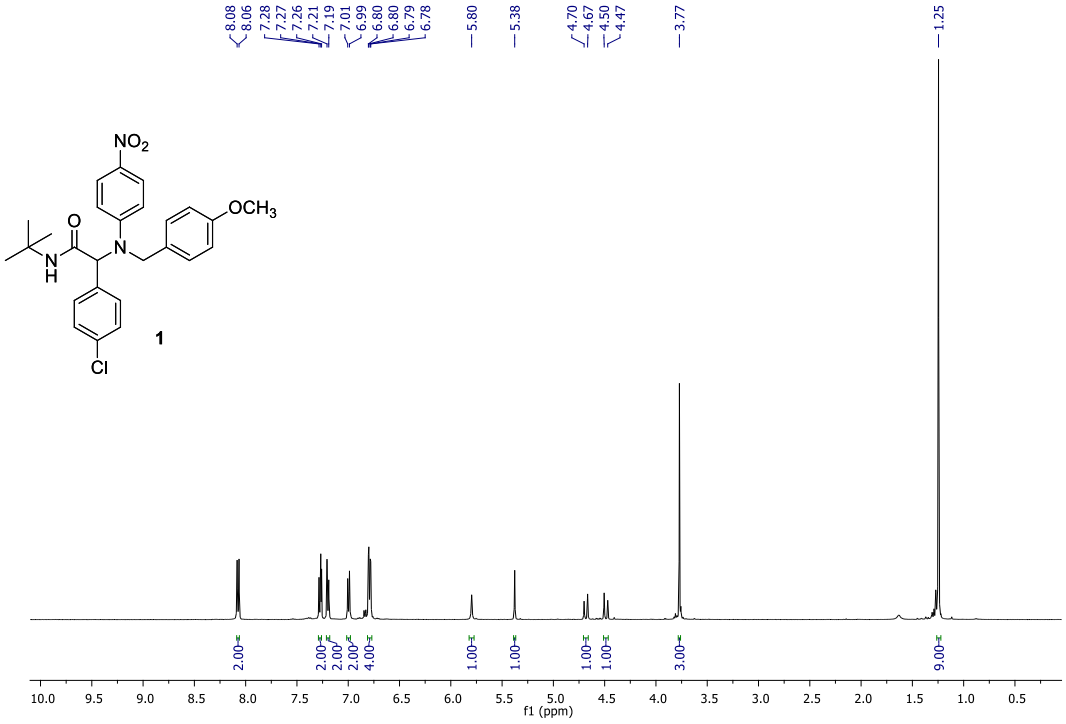


Figure S3. ^{1}H NMR spectrum of 1.

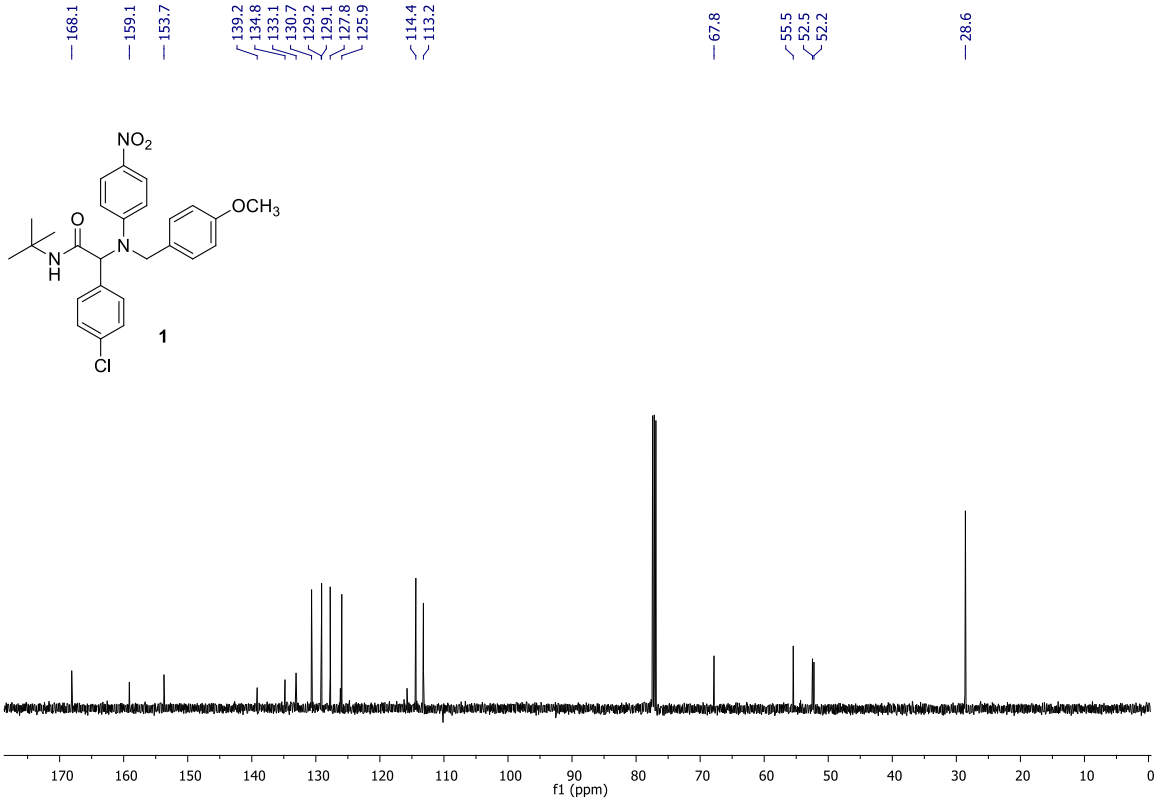


Figure S4. ^{13}C NMR spectrum of 1.

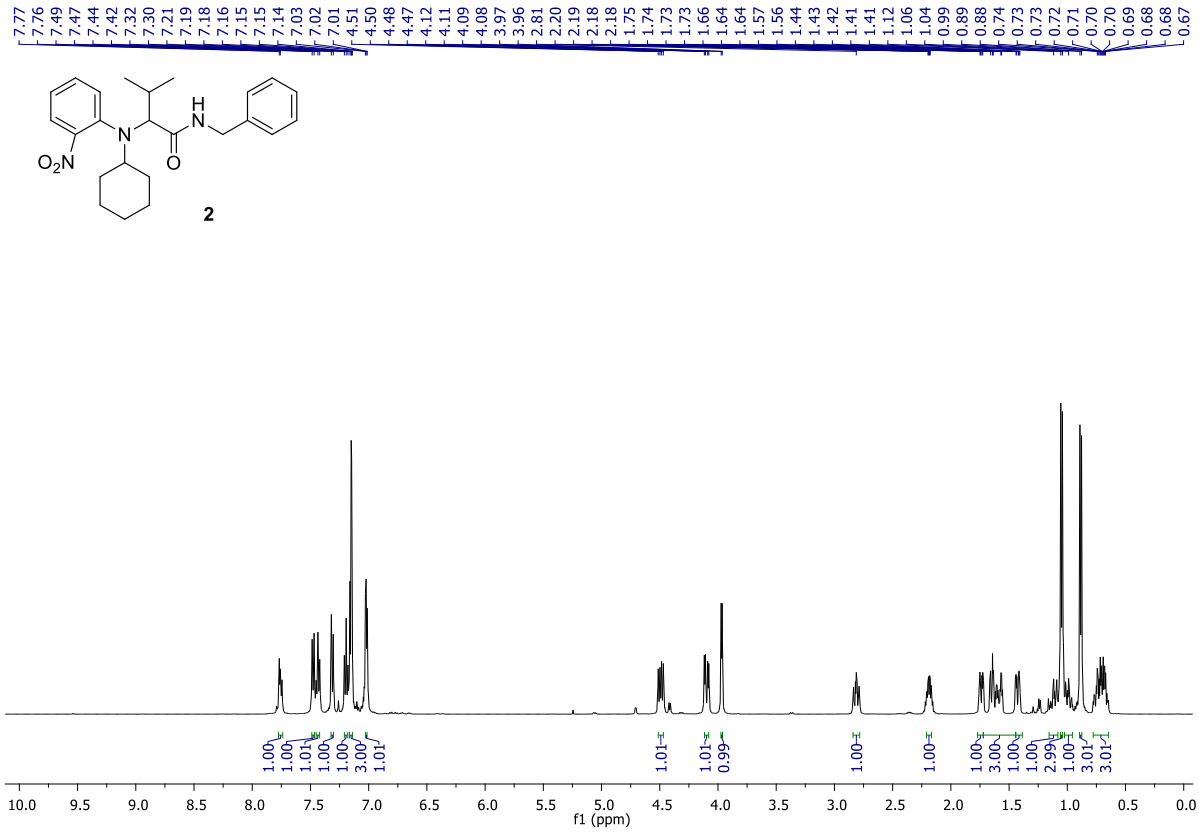


Figure S5. ^{1}H NMR spectrum of 2.

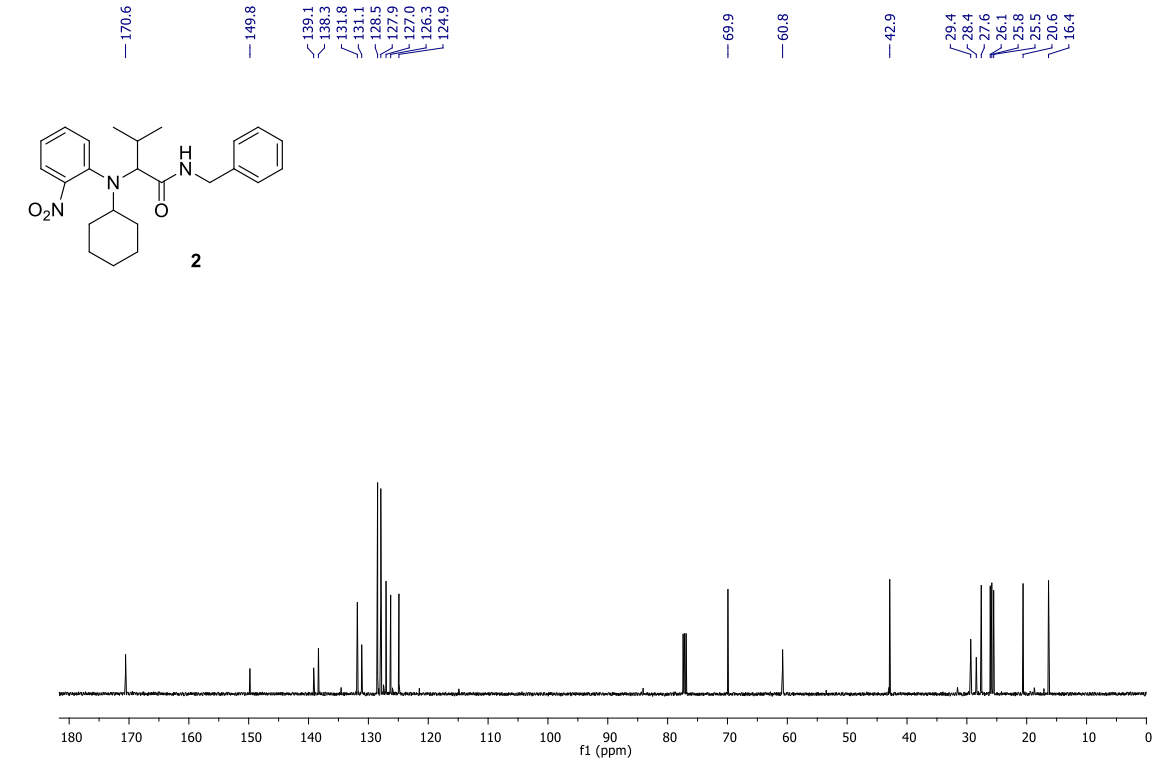
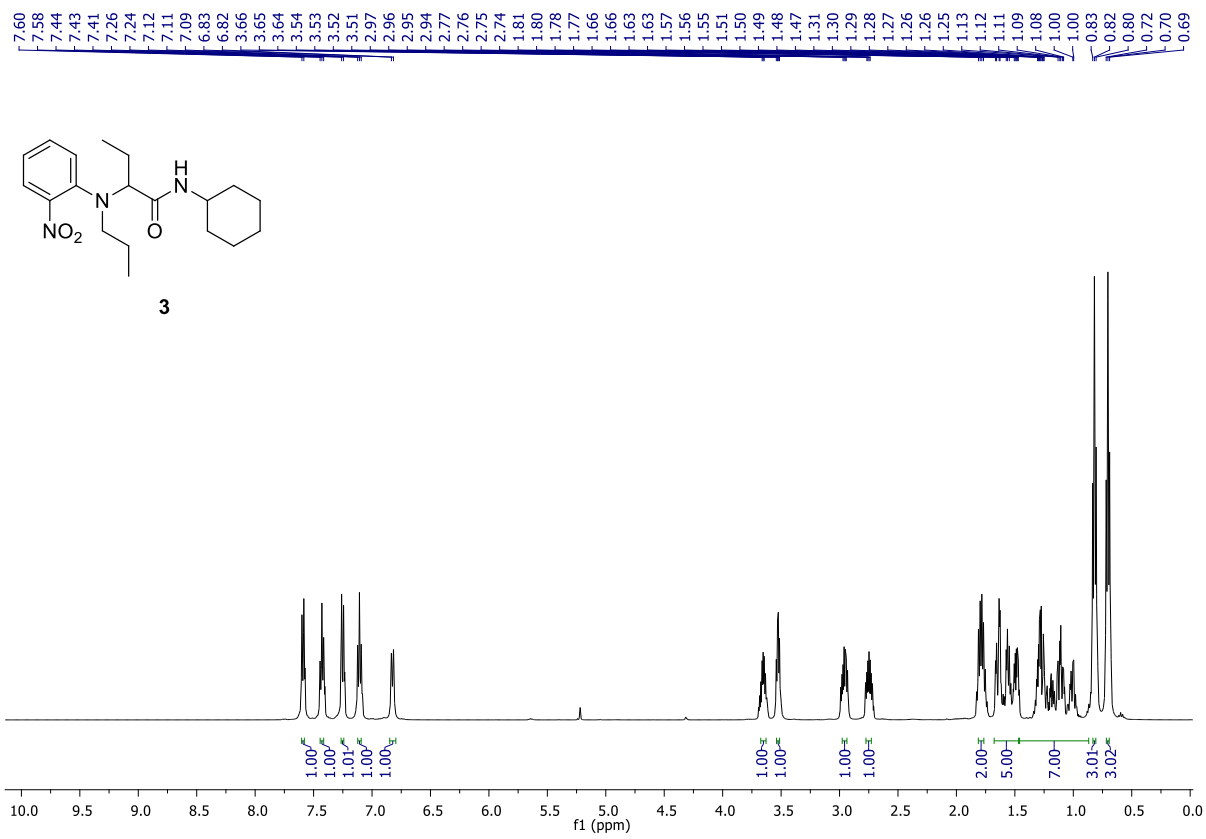
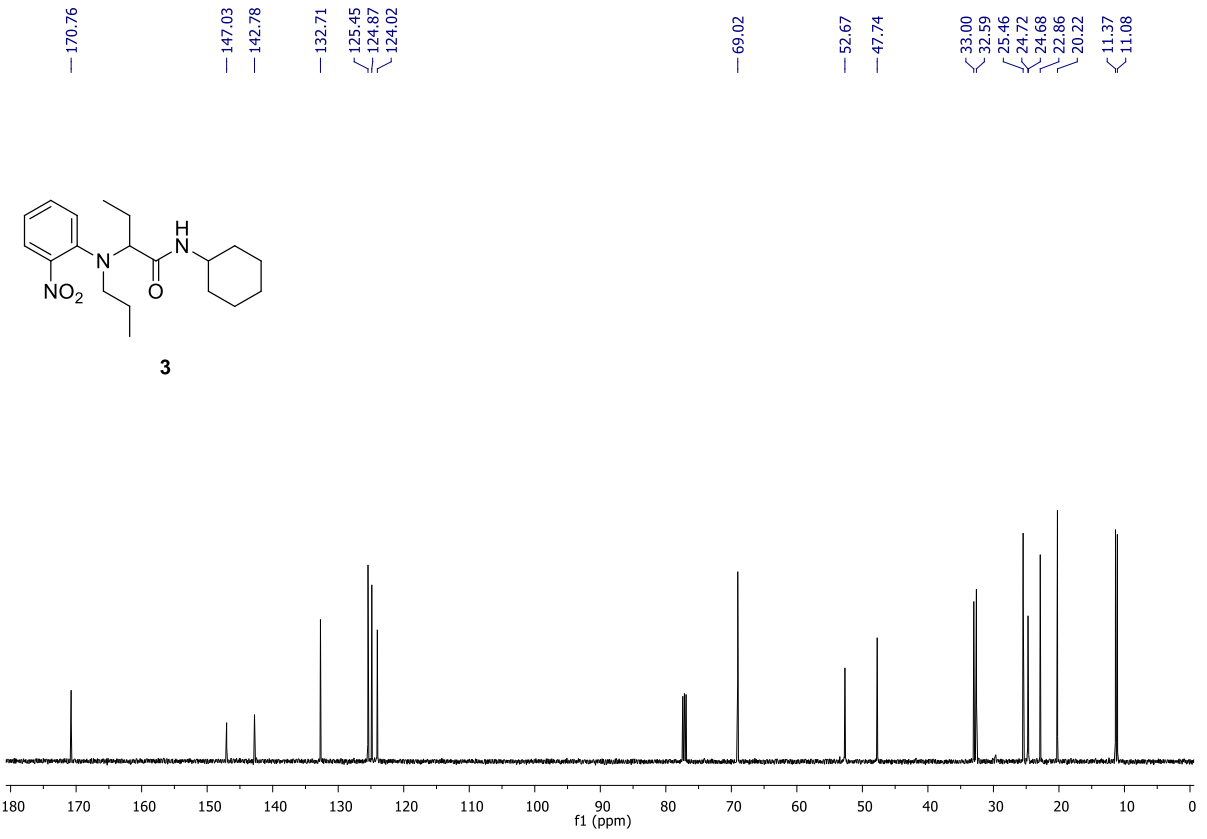


Figure S6. ^{13}C NMR spectrum of 2.



3

Figure S7. ^{1}H NMR spectrum of 3.



3

Figure S8. ^{13}C NMR spectrum of 3.

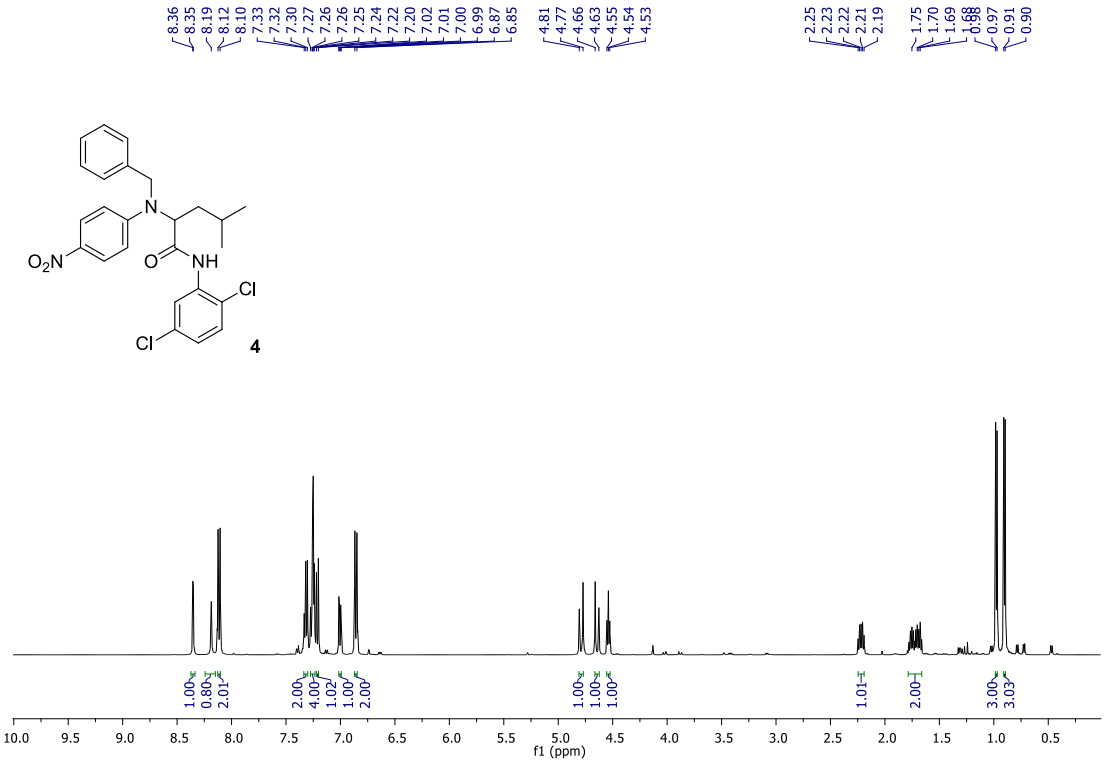


Figure S9. ^{1}H NMR spectrum of 4.

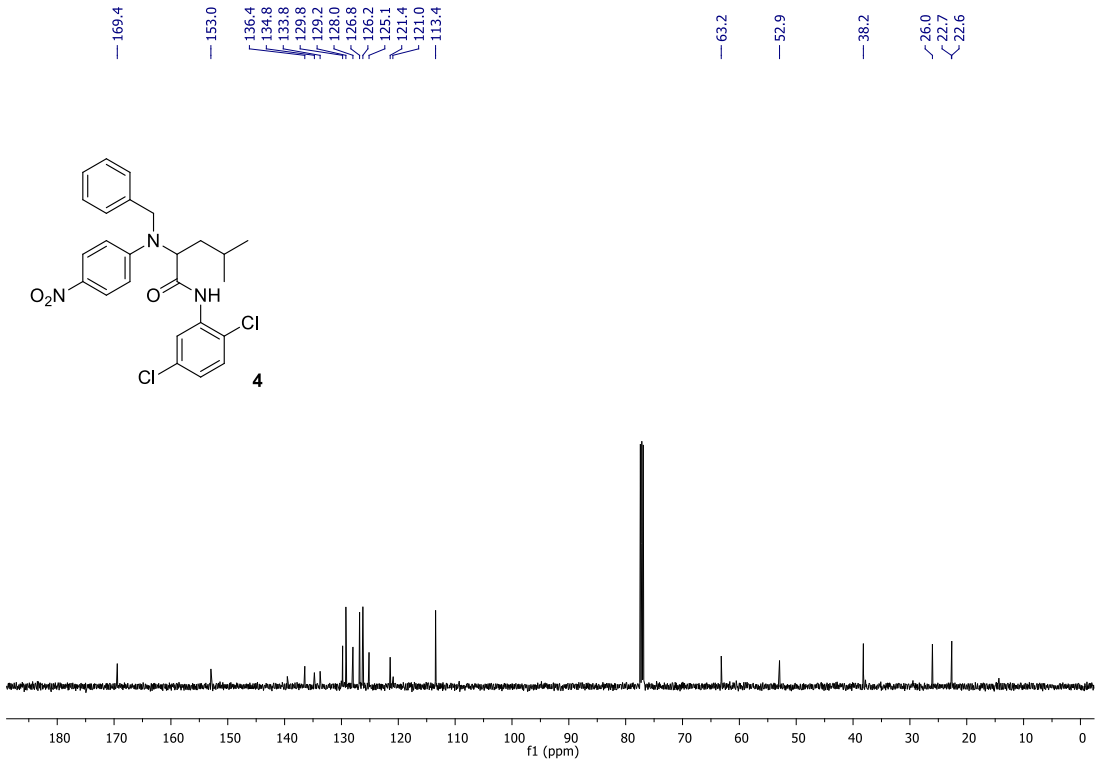


Figure S10. ^{13}C NMR spectrum of 4.

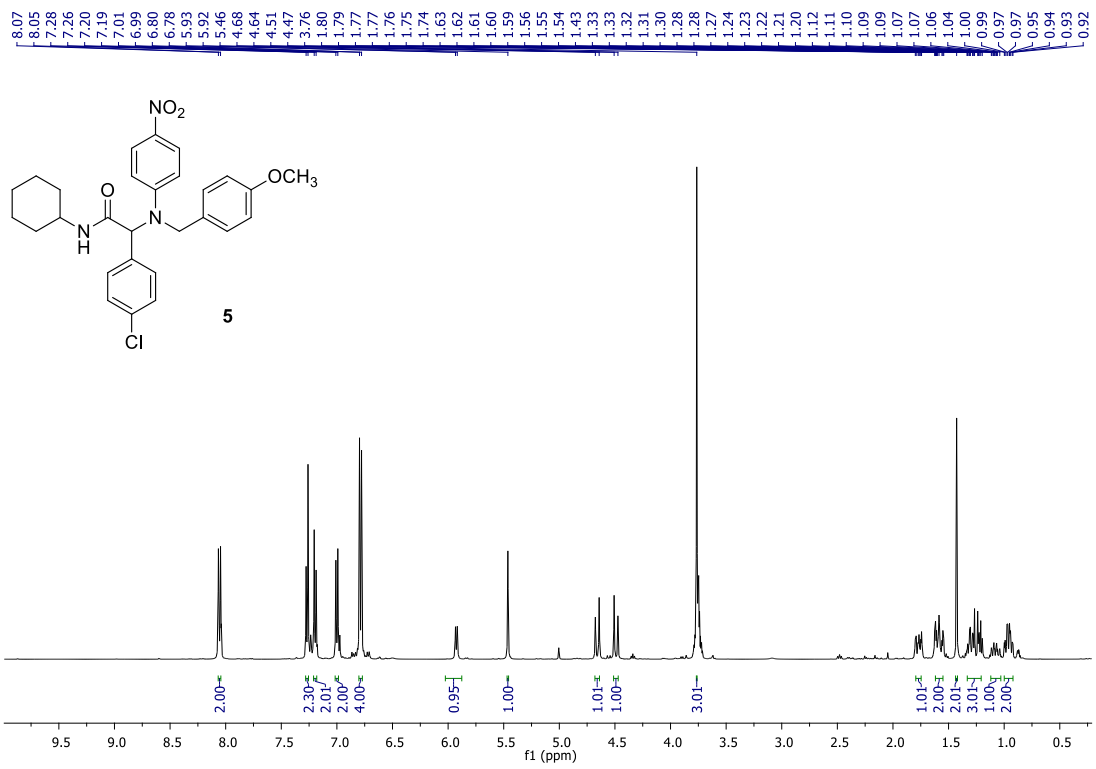


Figure S11. ^{1}H NMR spectrum of 5.

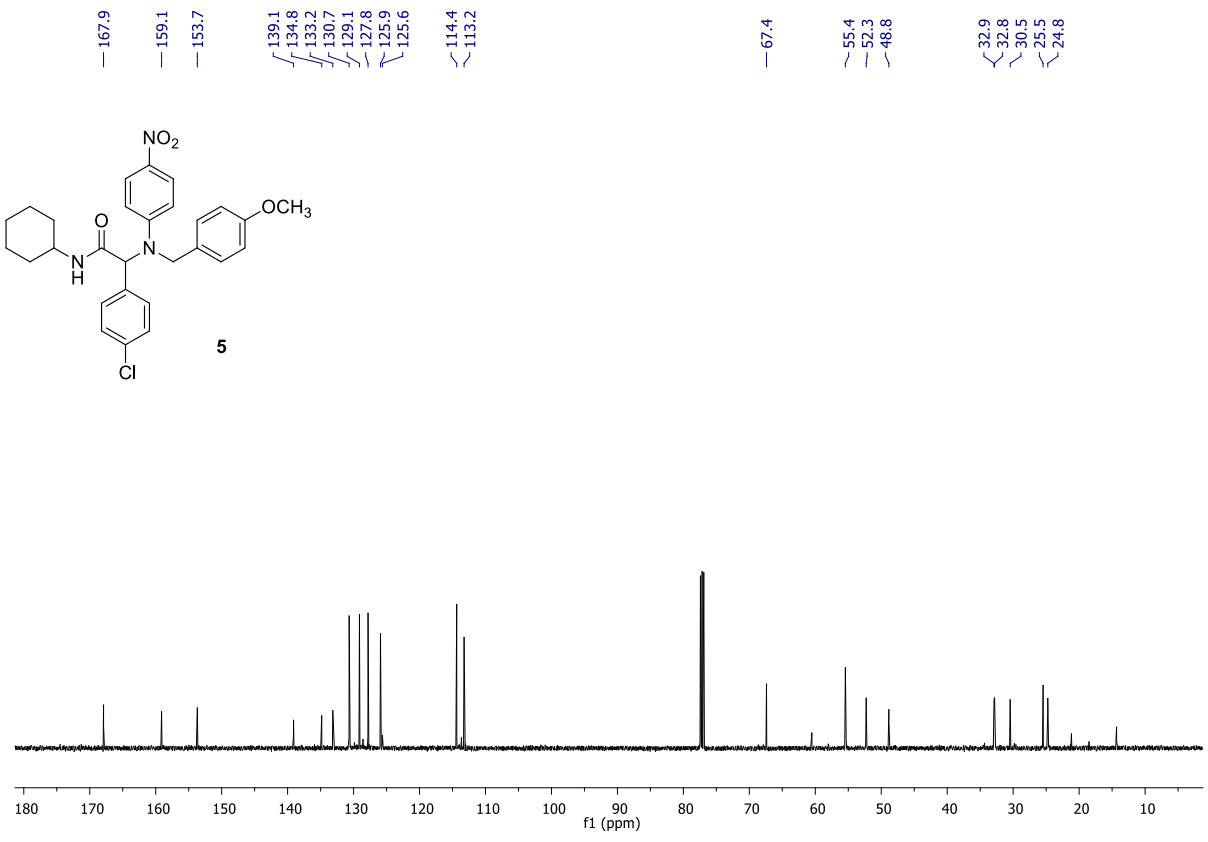


Figure S12. ^{13}C NMR spectrum of 5.

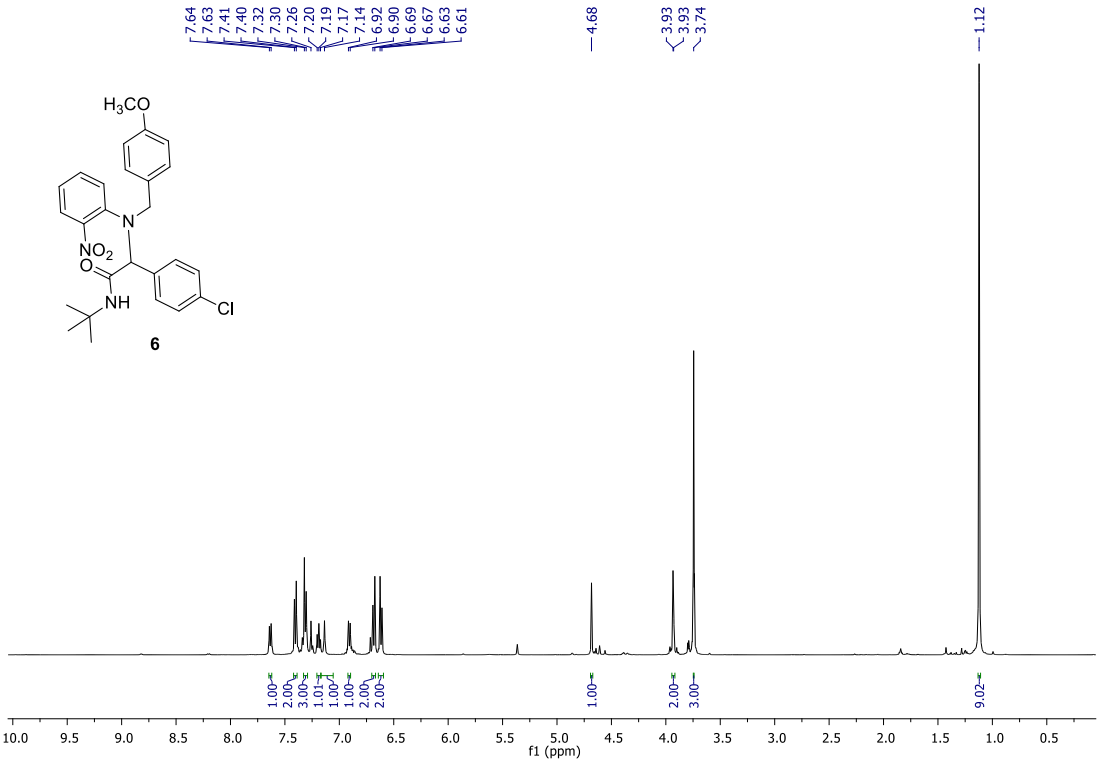


Figure S13. ^{1}H NMR spectrum of 6.

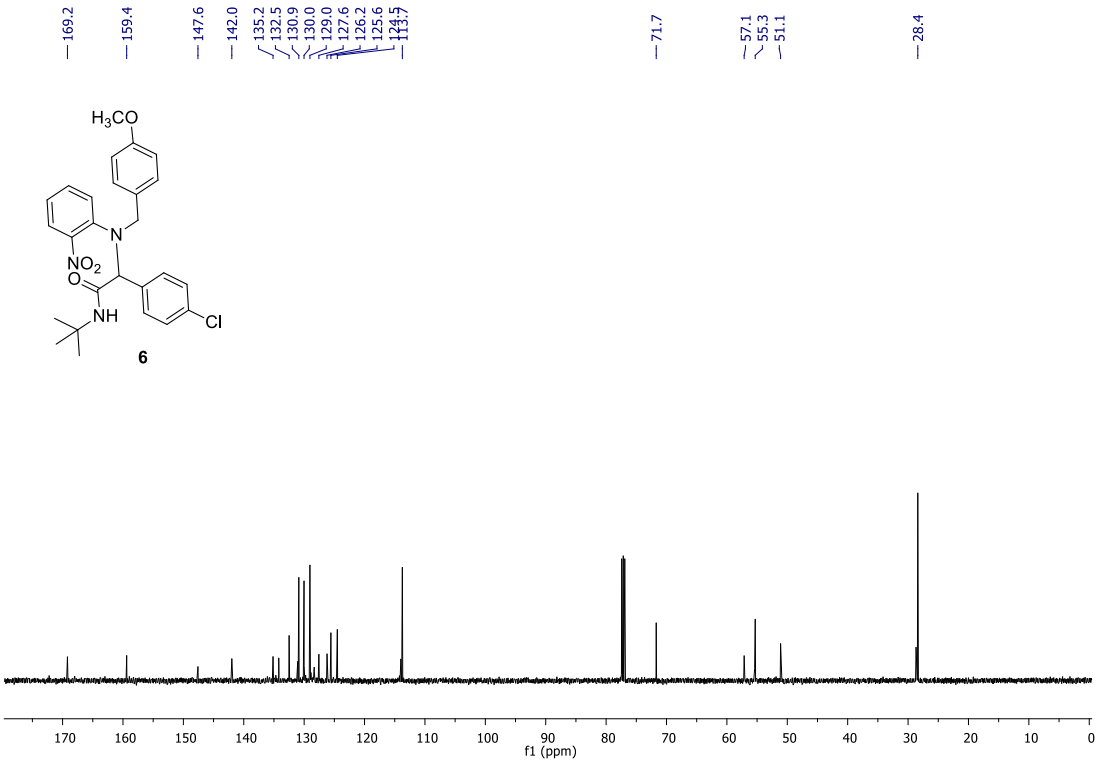


Figure S14. ^{13}C NMR spectrum of 6.

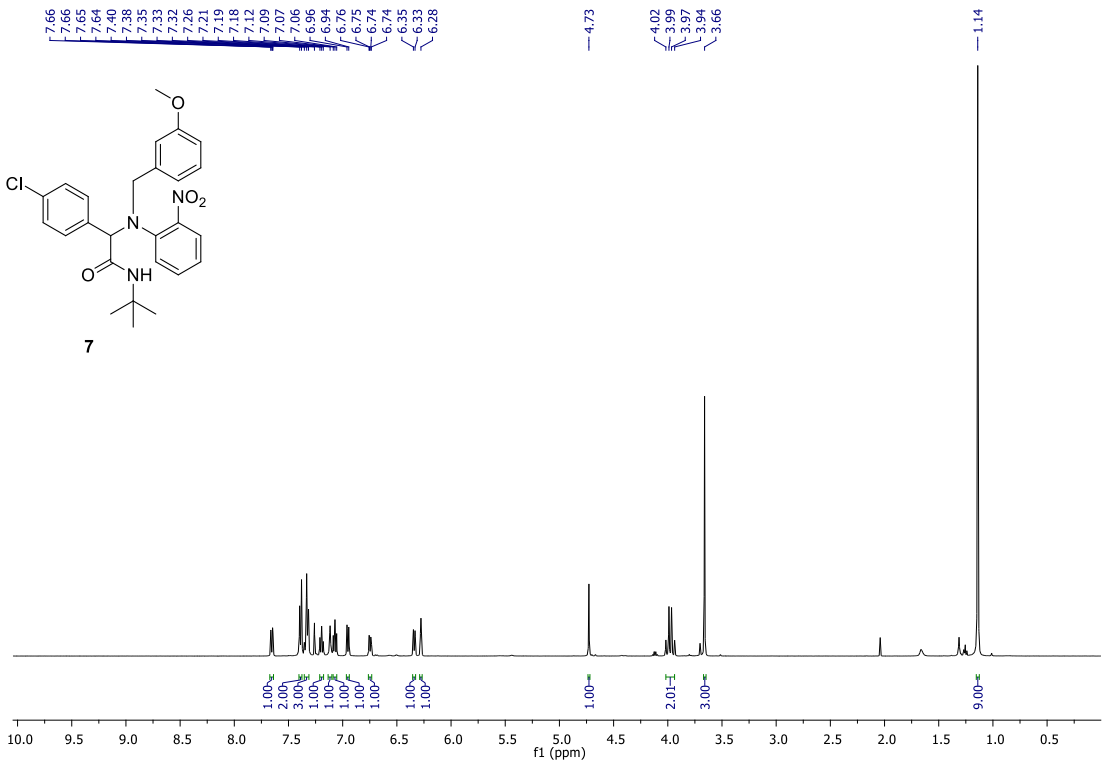


Figure S15. ^{1}H NMR spectrum of 7.

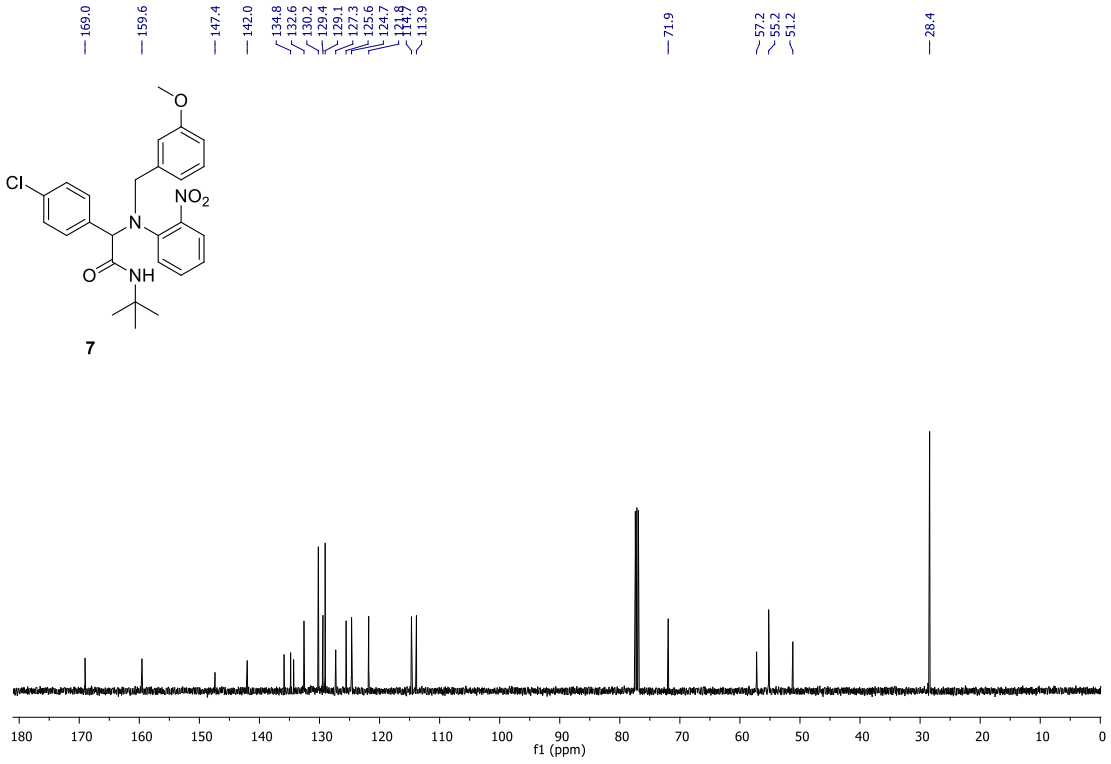


Figure S16. ^{13}C NMR spectrum of 7.

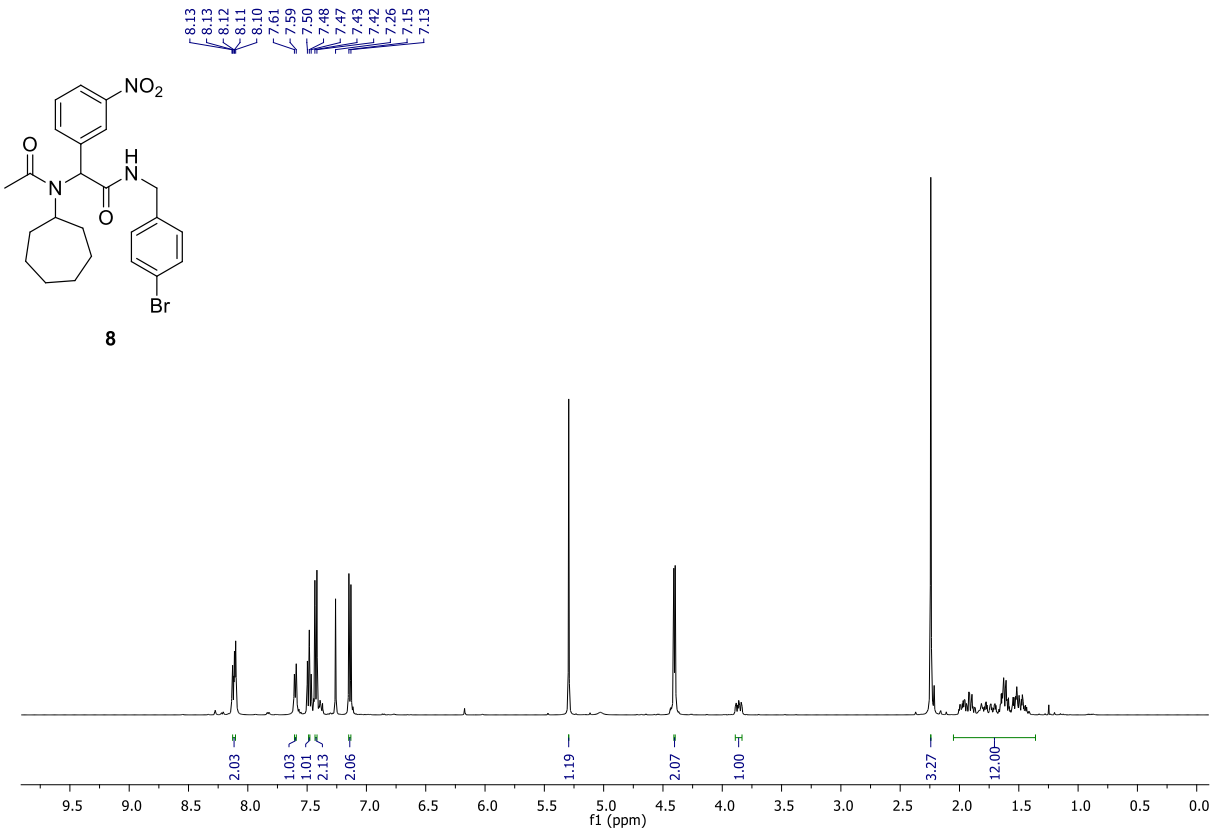


Figure S17. ^{1}H NMR spectrum of 8.

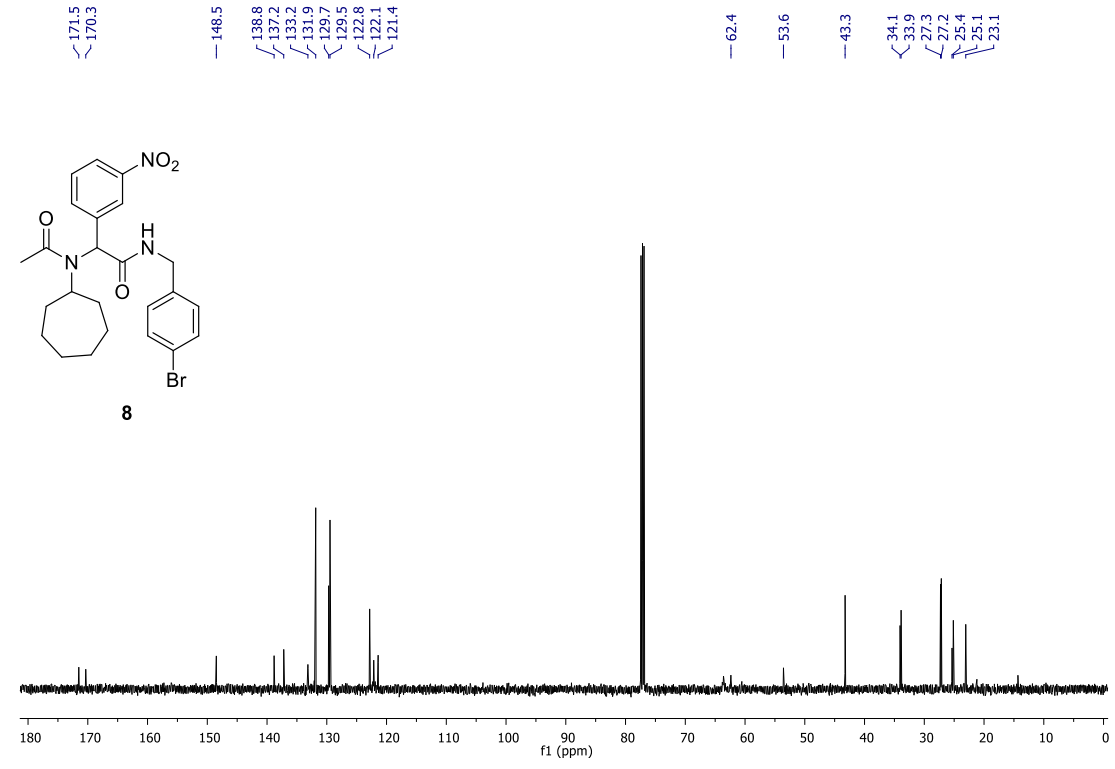


Figure S18. ^{13}C NMR spectrum of 8.

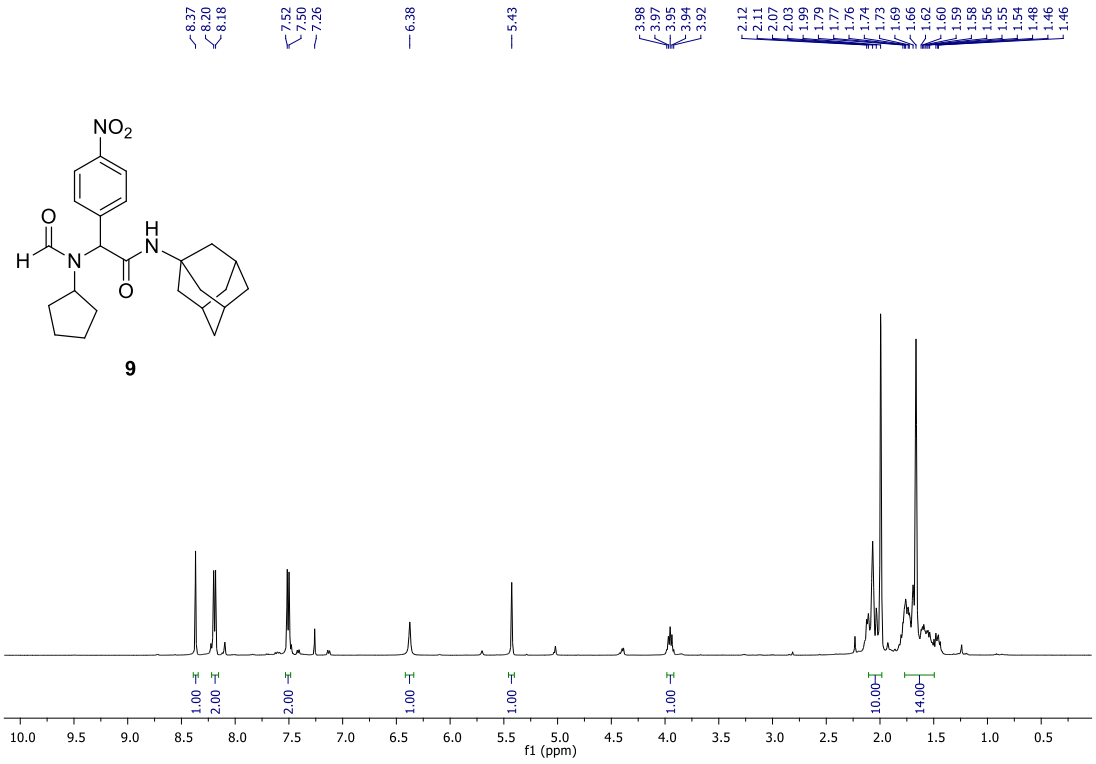


Figure S19. ^{1}H NMR spectrum of 9.

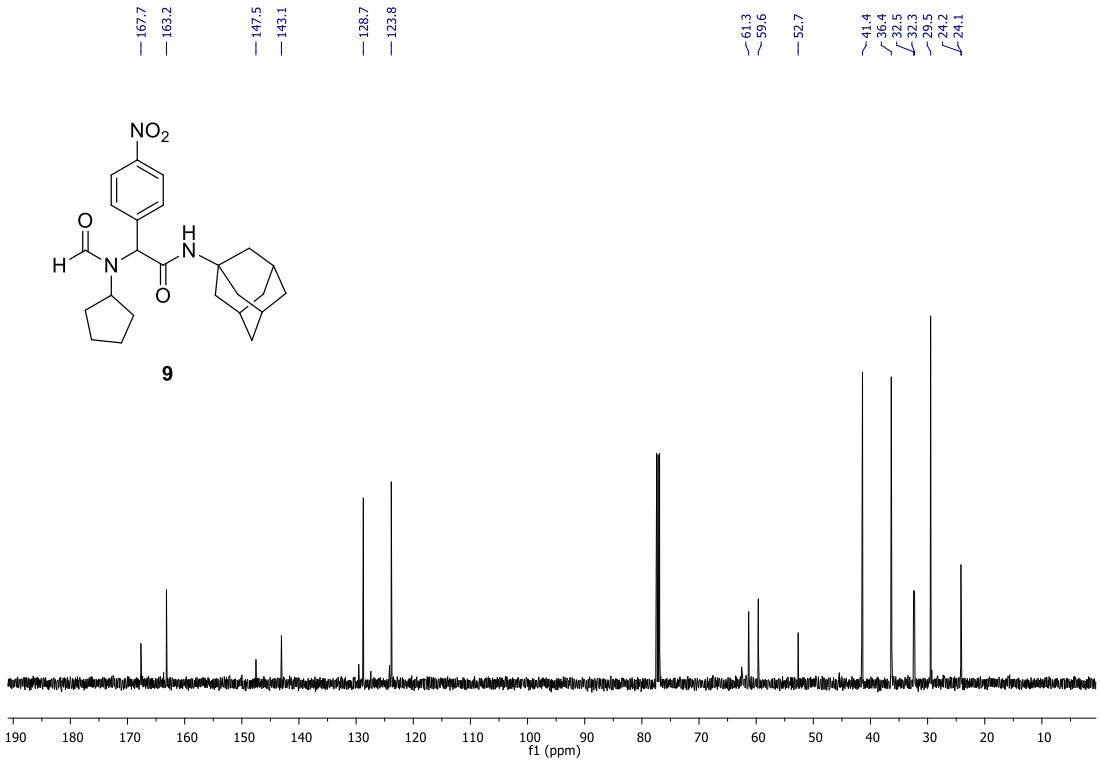


Figure S20. ^{13}C NMR spectrum of 9.

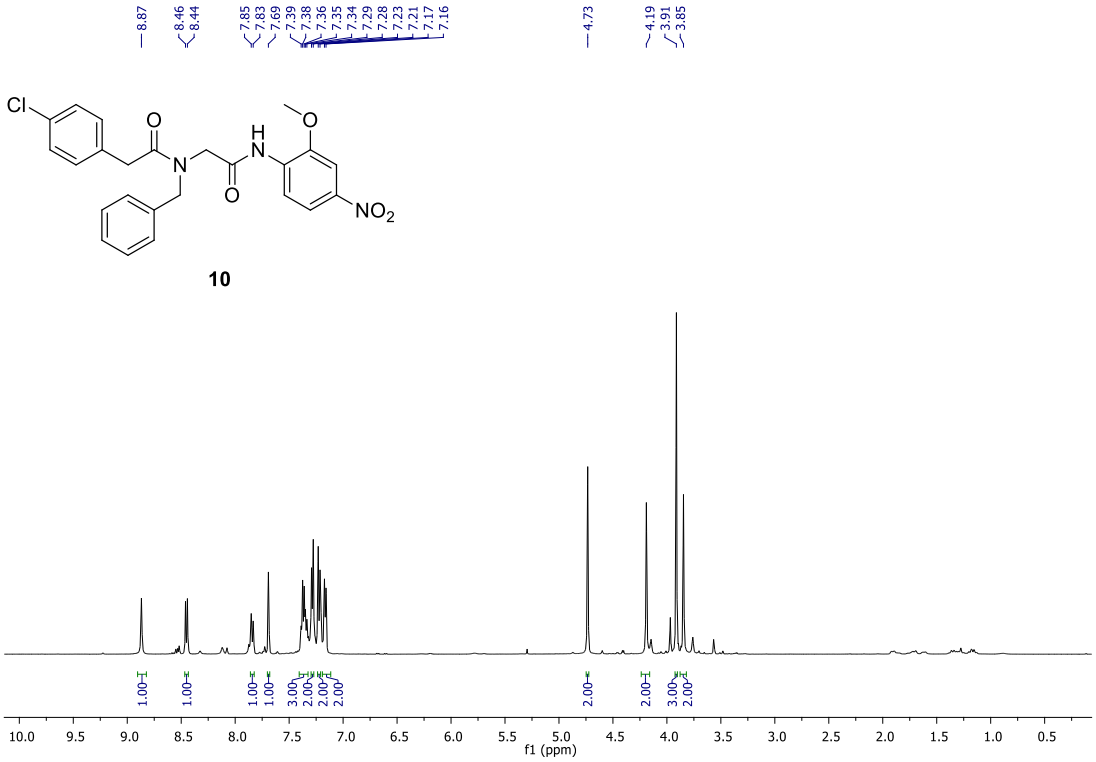


Figure S11. ^{1}H NMR spectrum of 10.

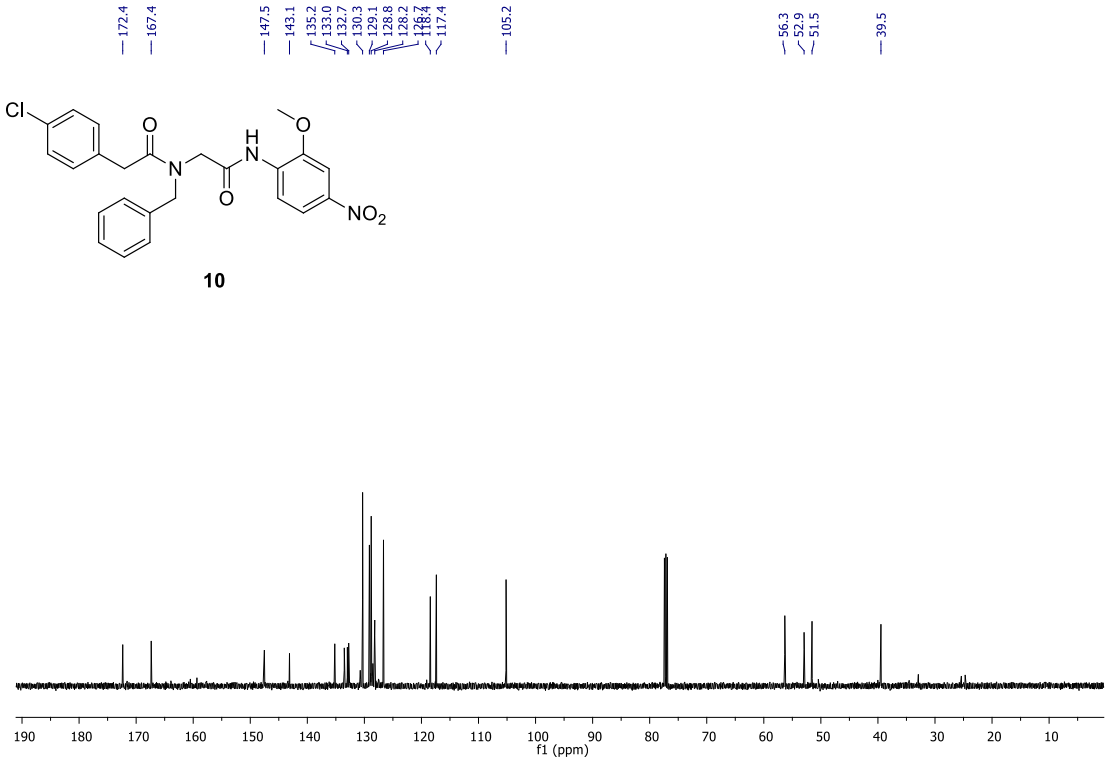


Figure S22. ^{13}C NMR spectrum of 10.

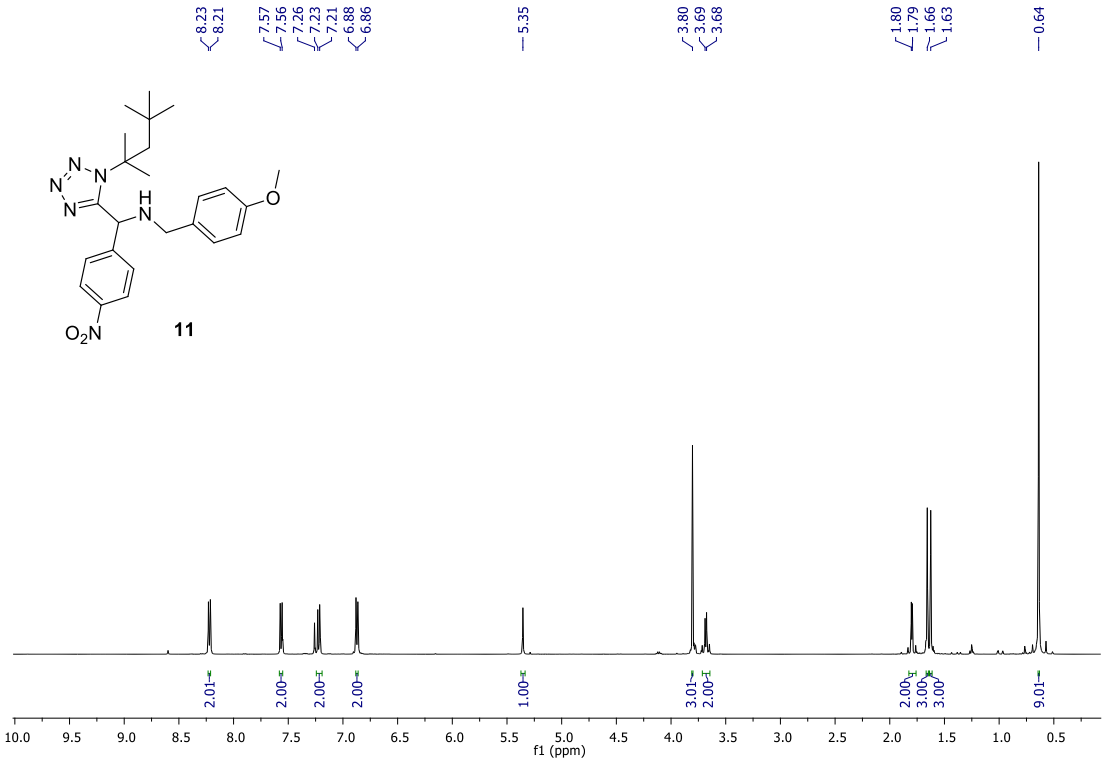


Figure S23. ^{1}H NMR spectrum of 11.

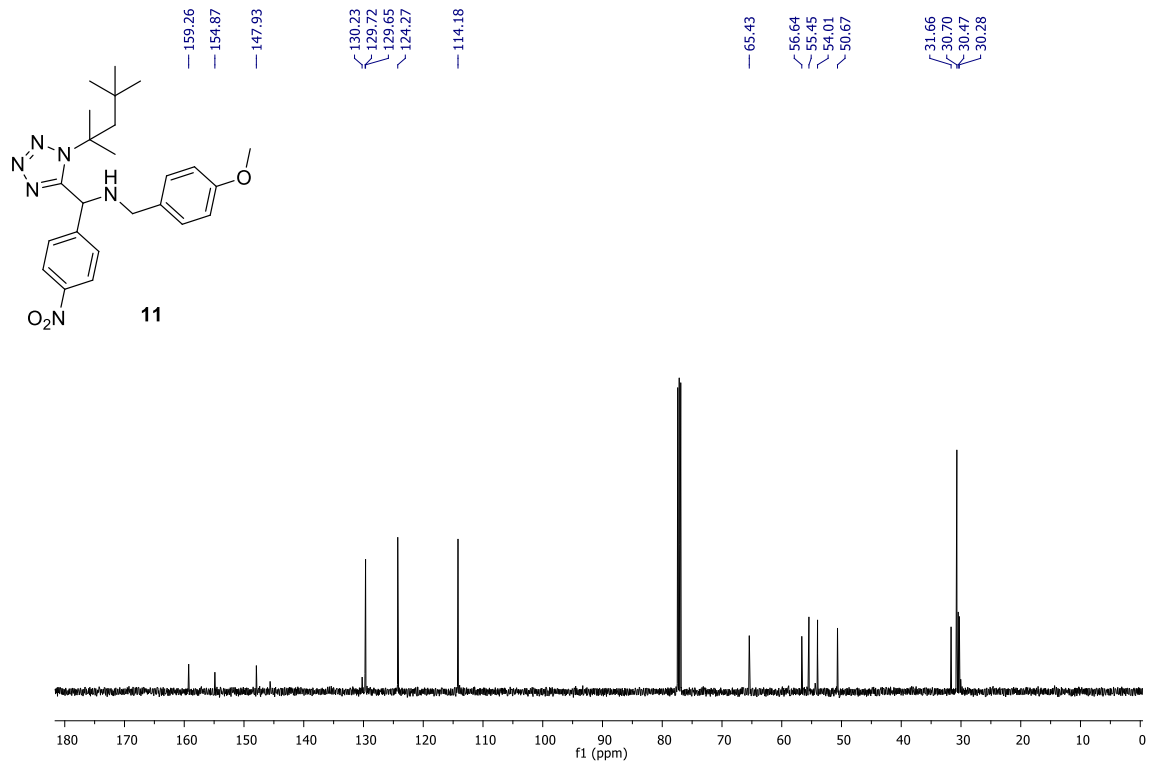


Figure S24. ^{13}C NMR spectrum of 11.

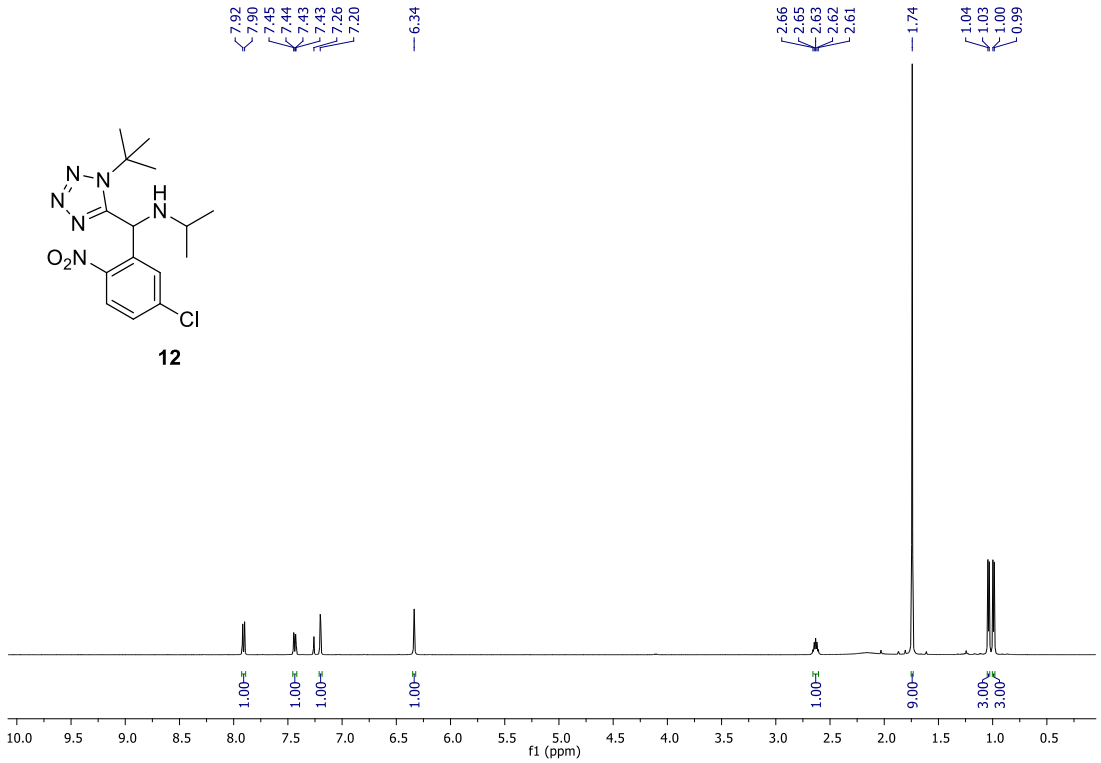


Figure S25. ^{1}H NMR spectrum of 12.

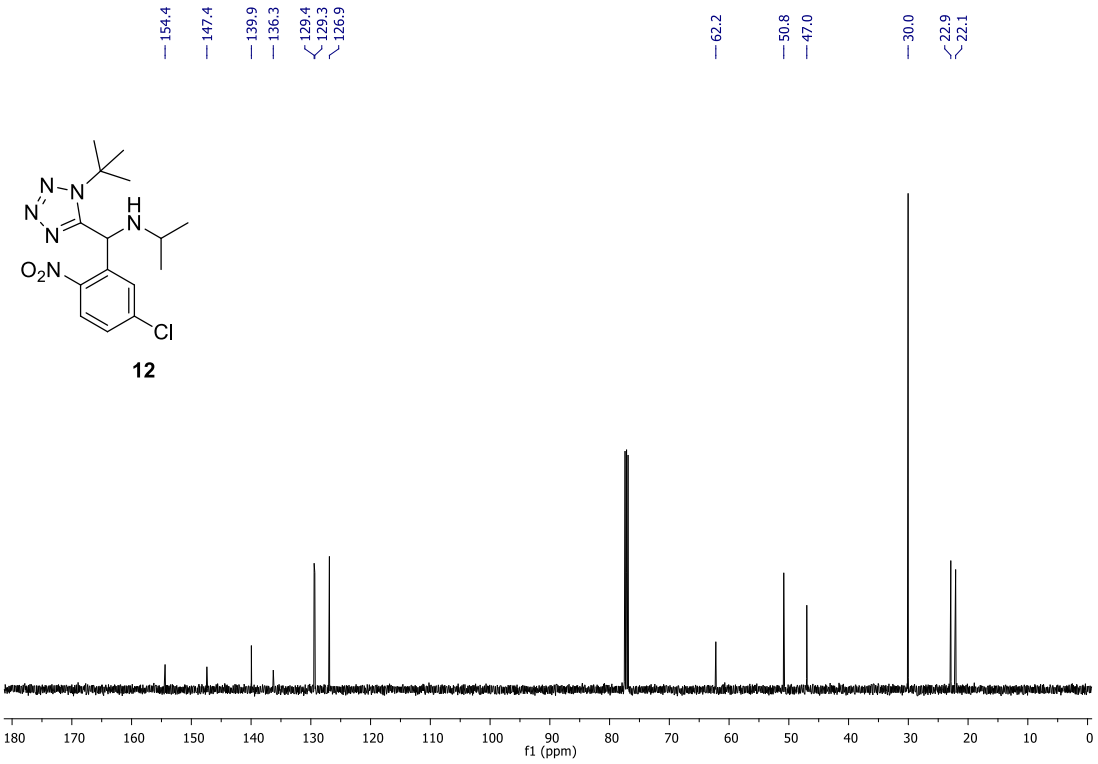


Figure S26. ^{13}C NMR spectrum of 12.

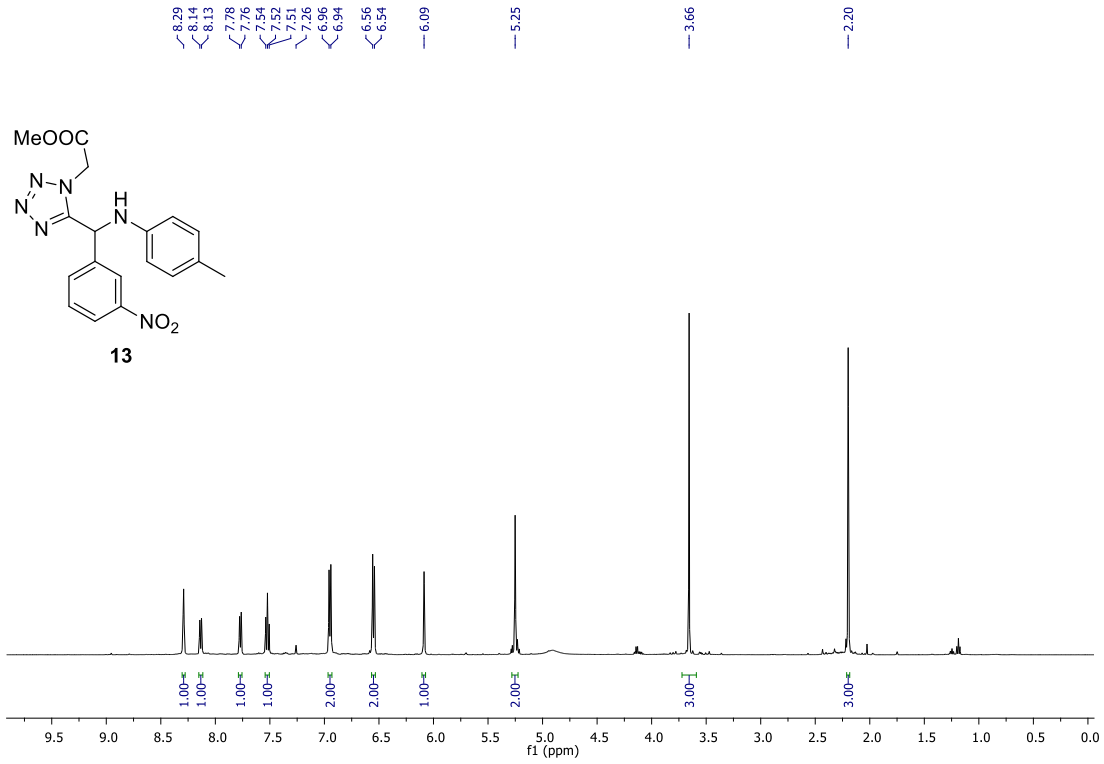


Figure S27. ^{1}H NMR spectrum of 13.

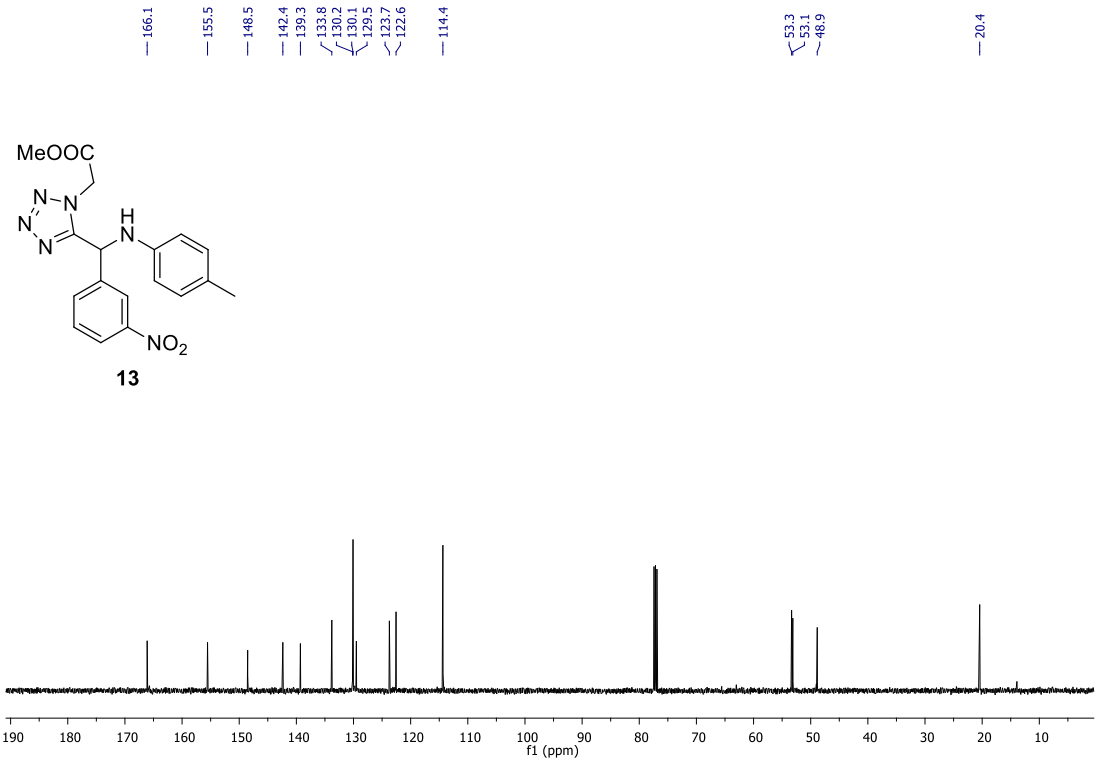


Figure S28. ^{13}C NMR spectrum of 13.

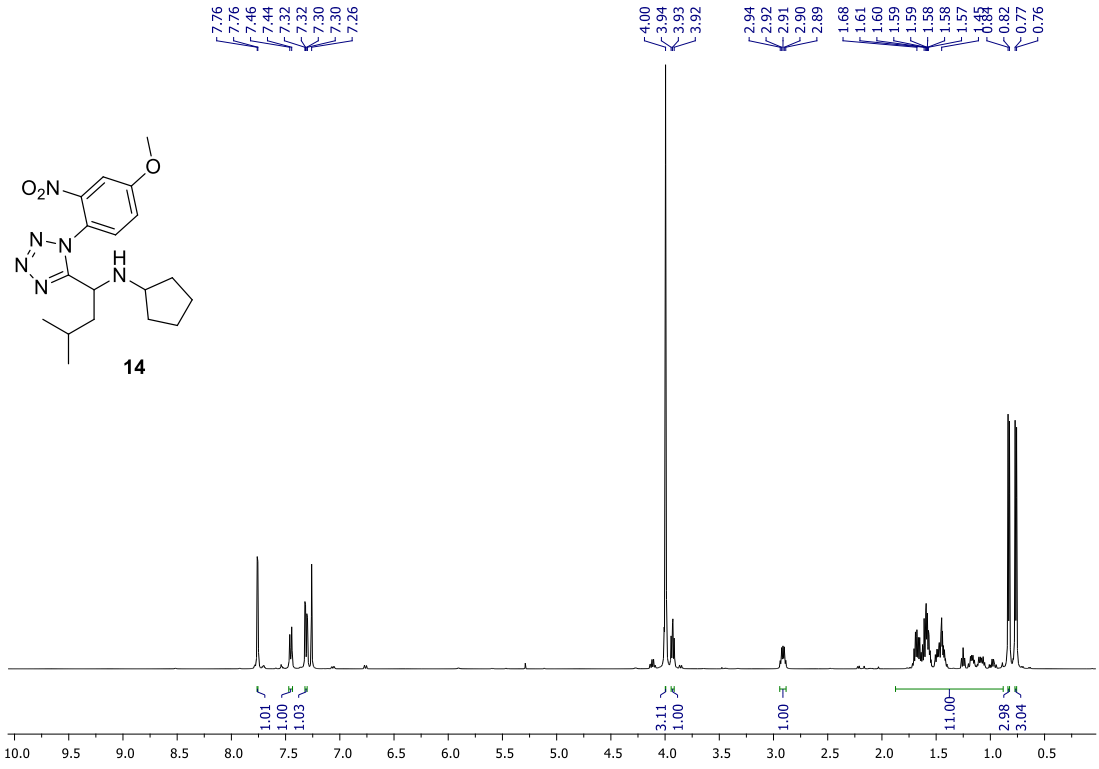


Figure S29. ^{1}H NMR spectrum of 14.

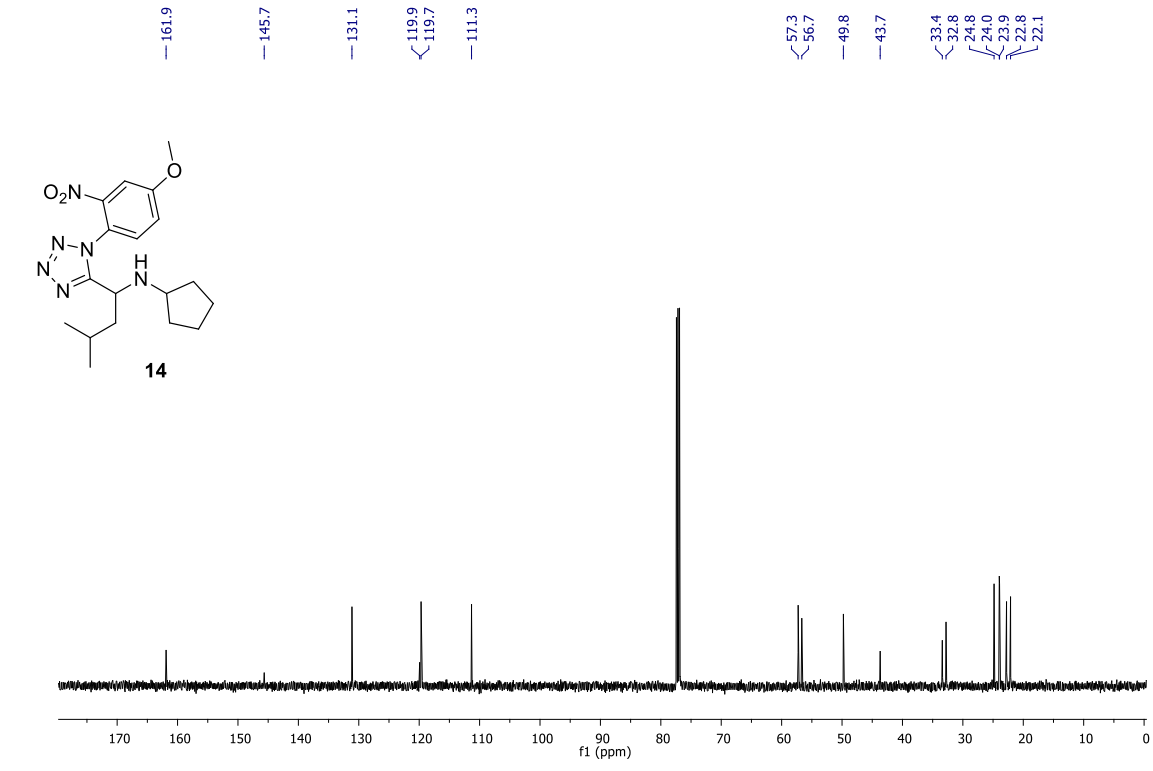


Figure S30. ^{13}C NMR spectrum of 14.

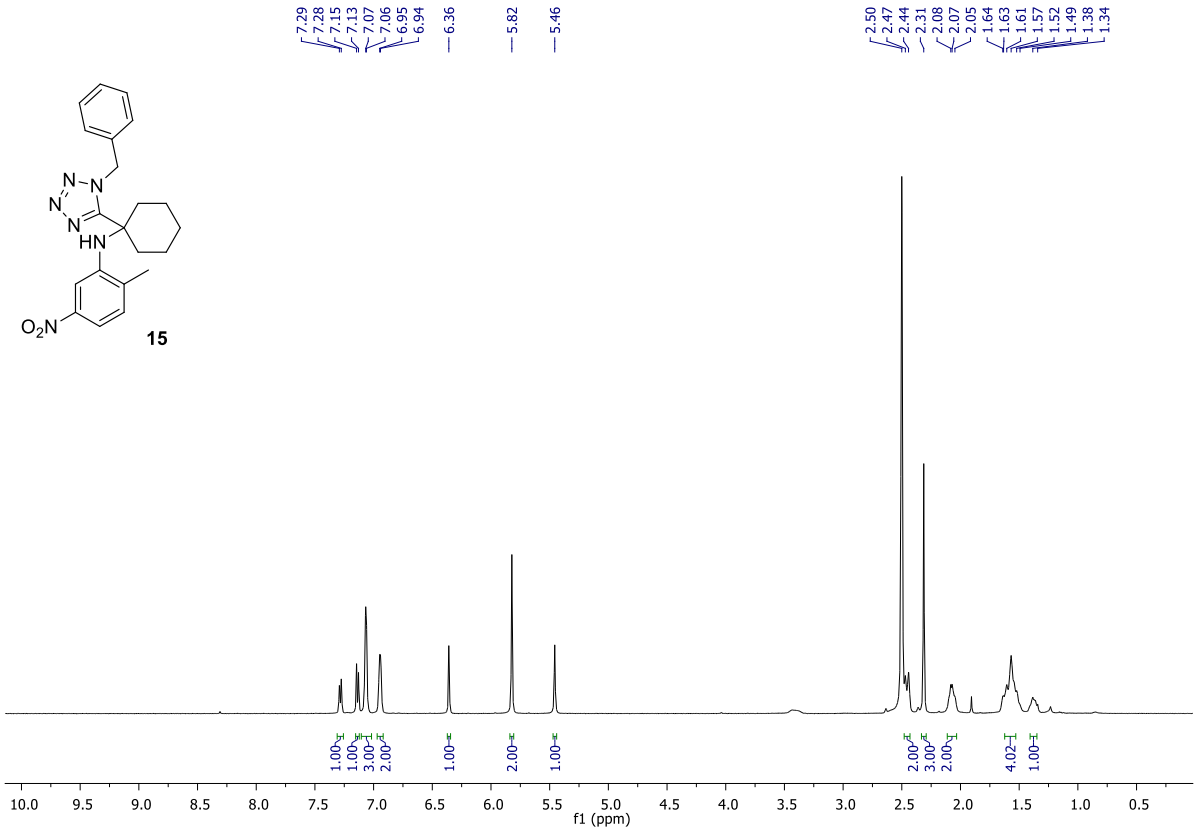


Figure S31. ^{1}H NMR spectrum of 15.

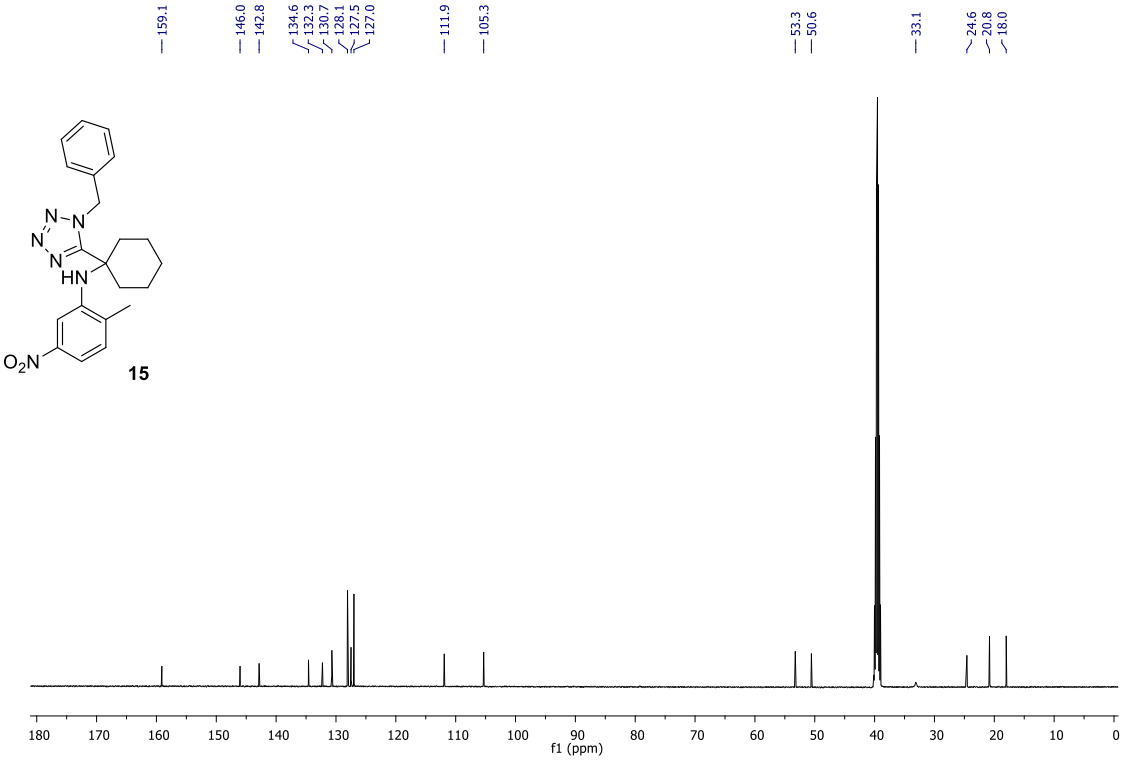


Figure S32. ^{13}C NMR spectrum of 15.

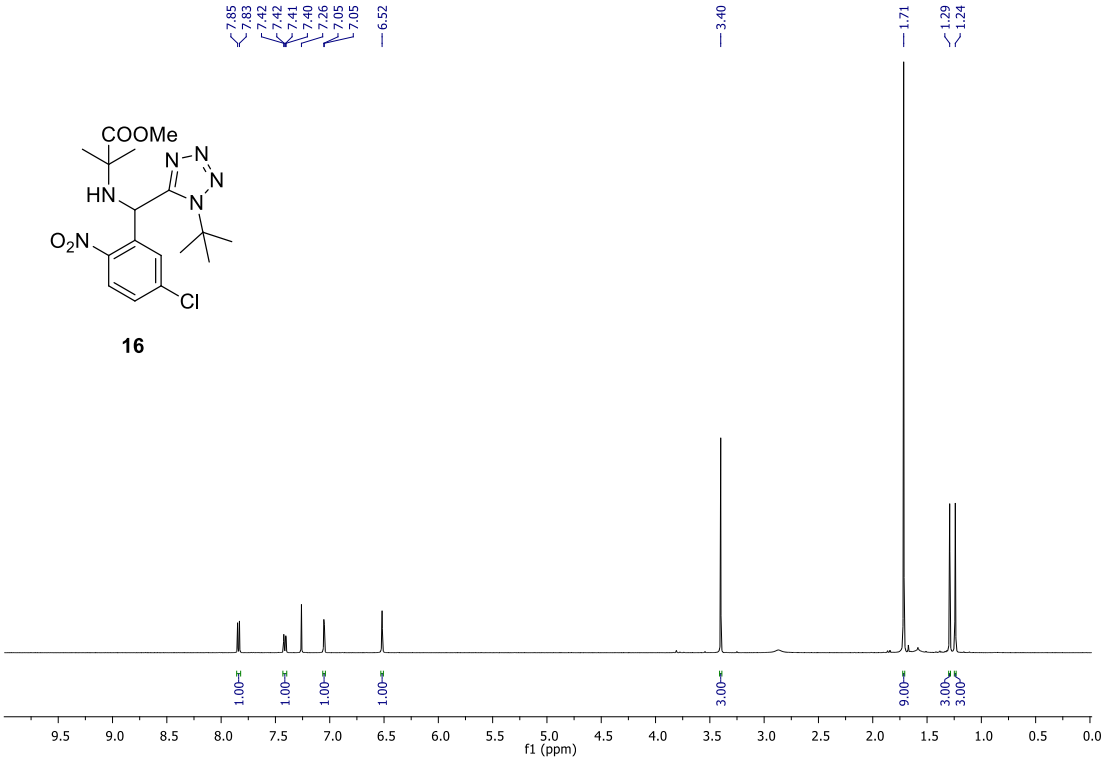


Figure S33. ^{1}H NMR spectrum of 16.

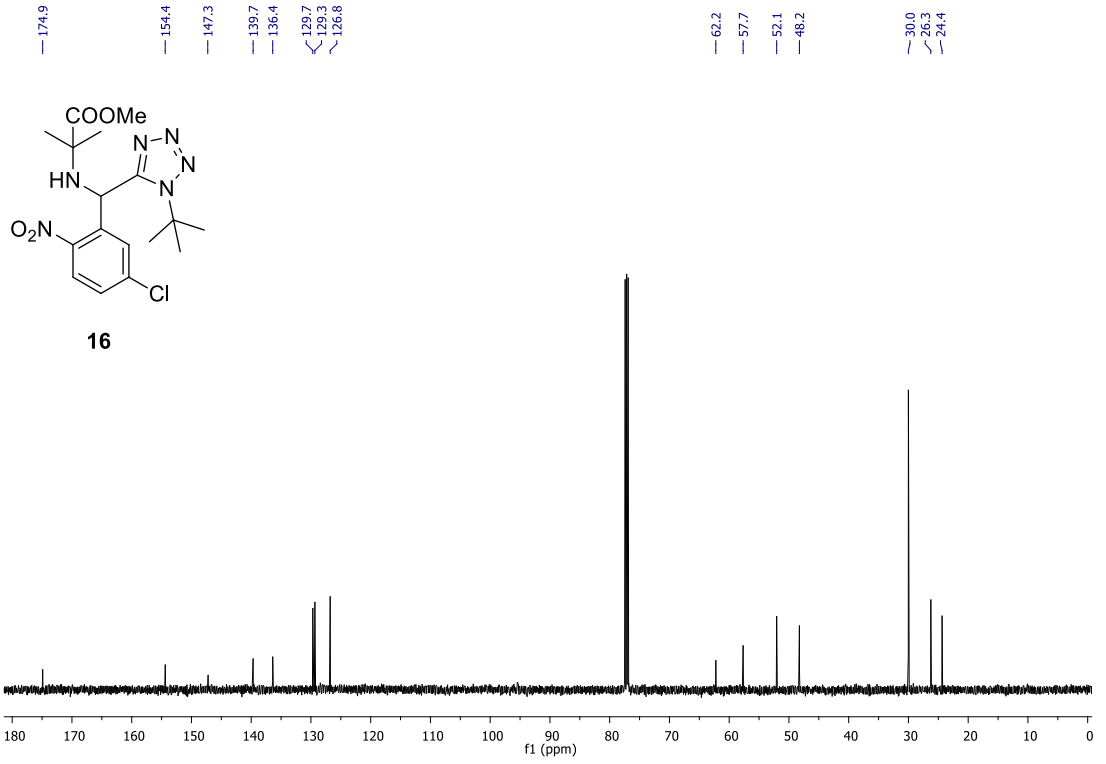


Figure S34. ^{13}C NMR spectrum of 16.

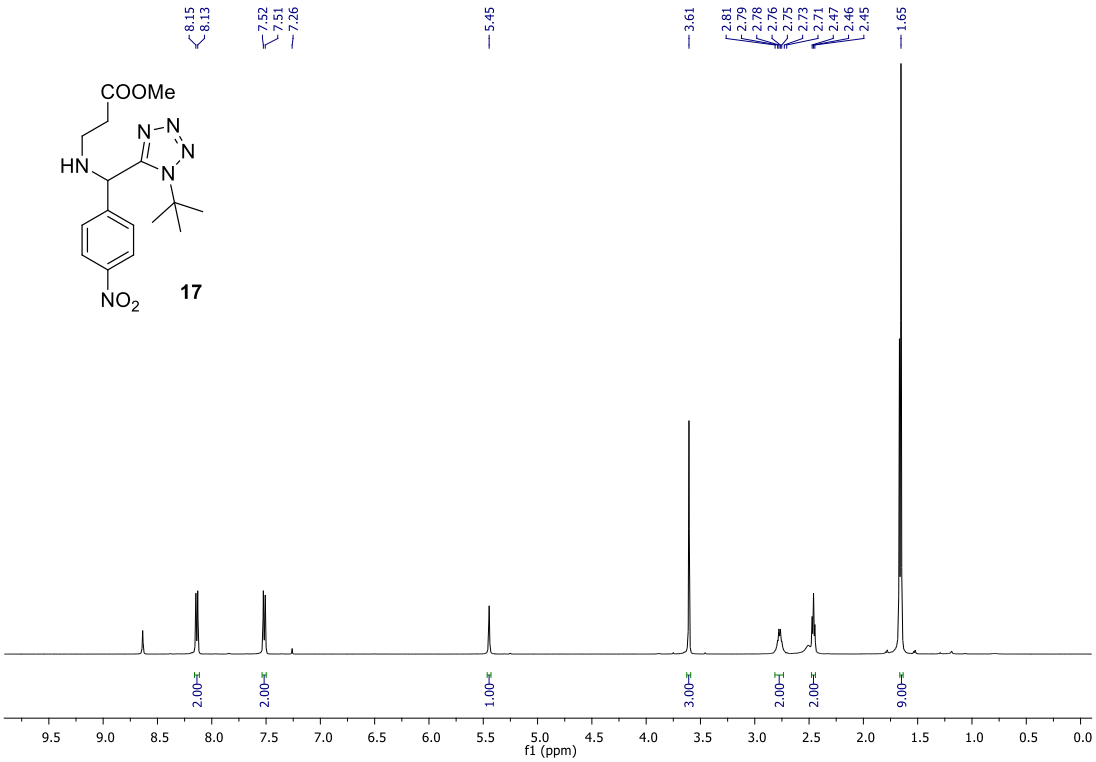


Figure S35. ^{1}H NMR spectrum of 17.

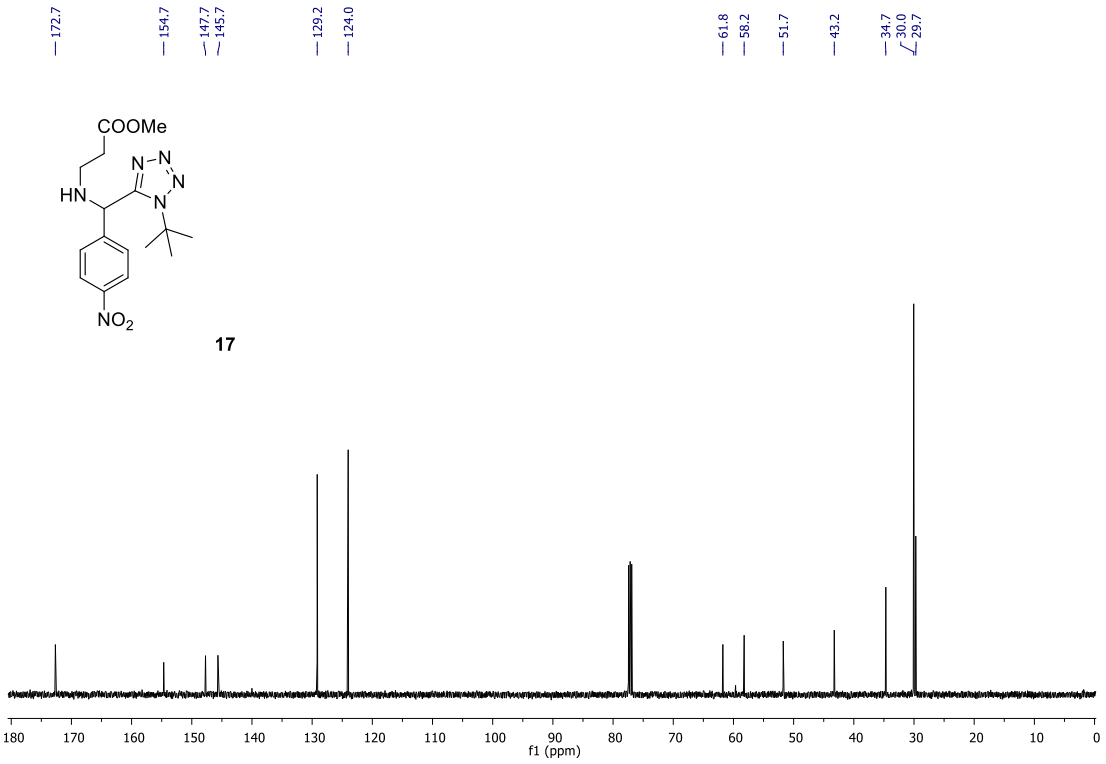


Figure S36. ^{13}C NMR spectrum of 17.

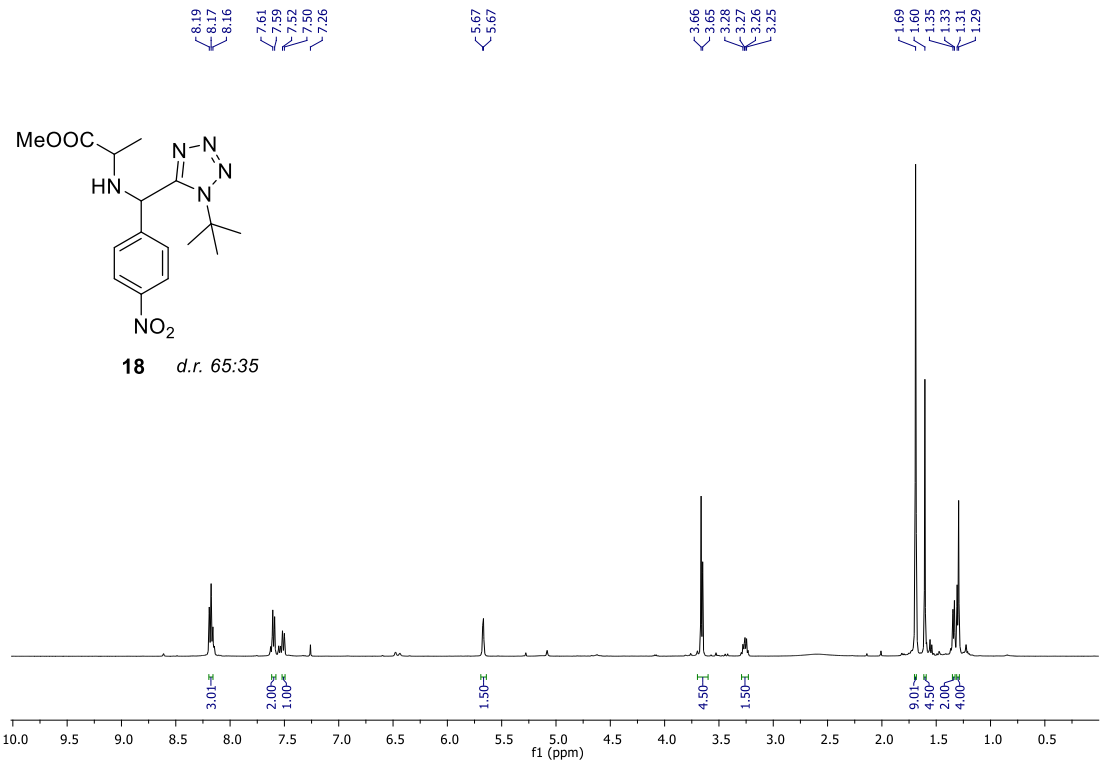


Figure S37. ^{1}H NMR spectrum of 18.

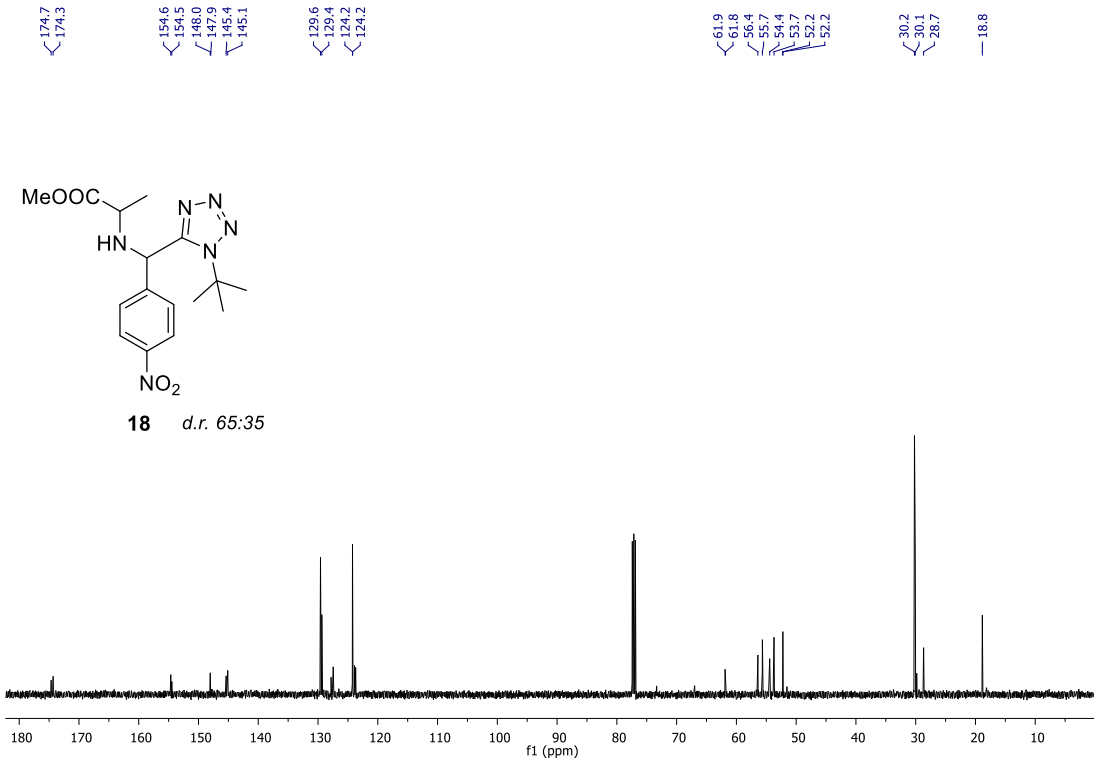


Figure S38. ^{13}C NMR spectrum of 18.

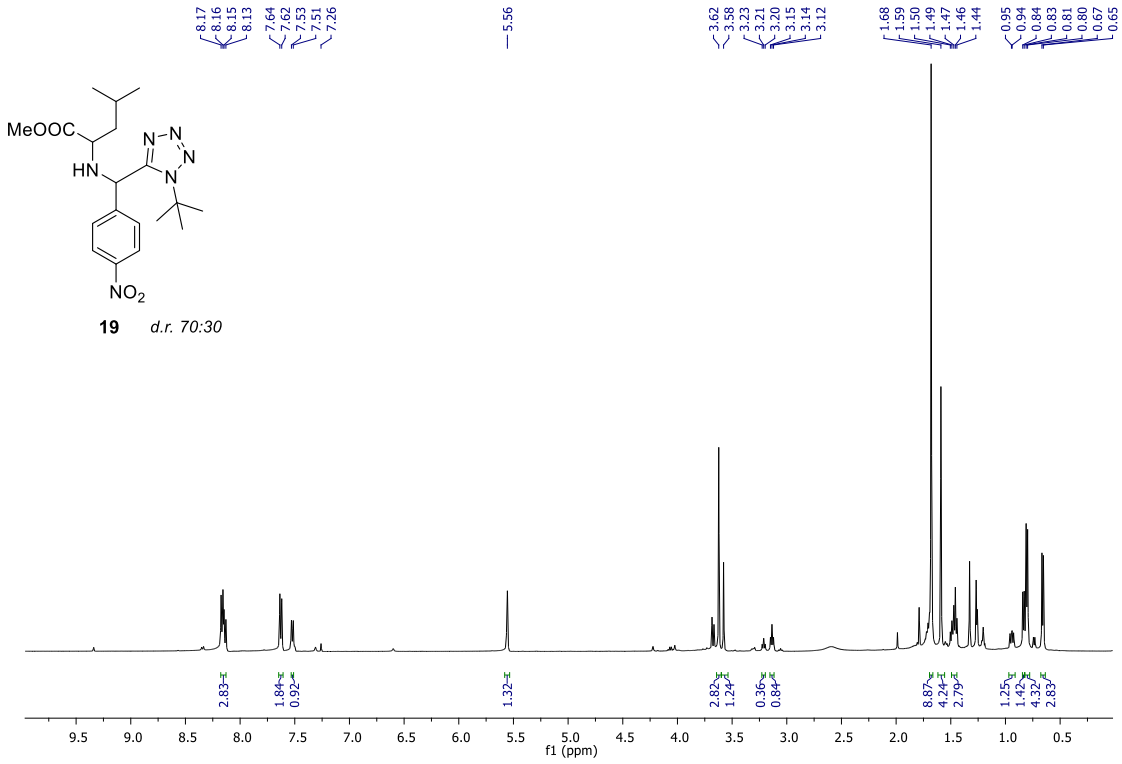


Figure S39. ^{1}H NMR spectrum of 19.

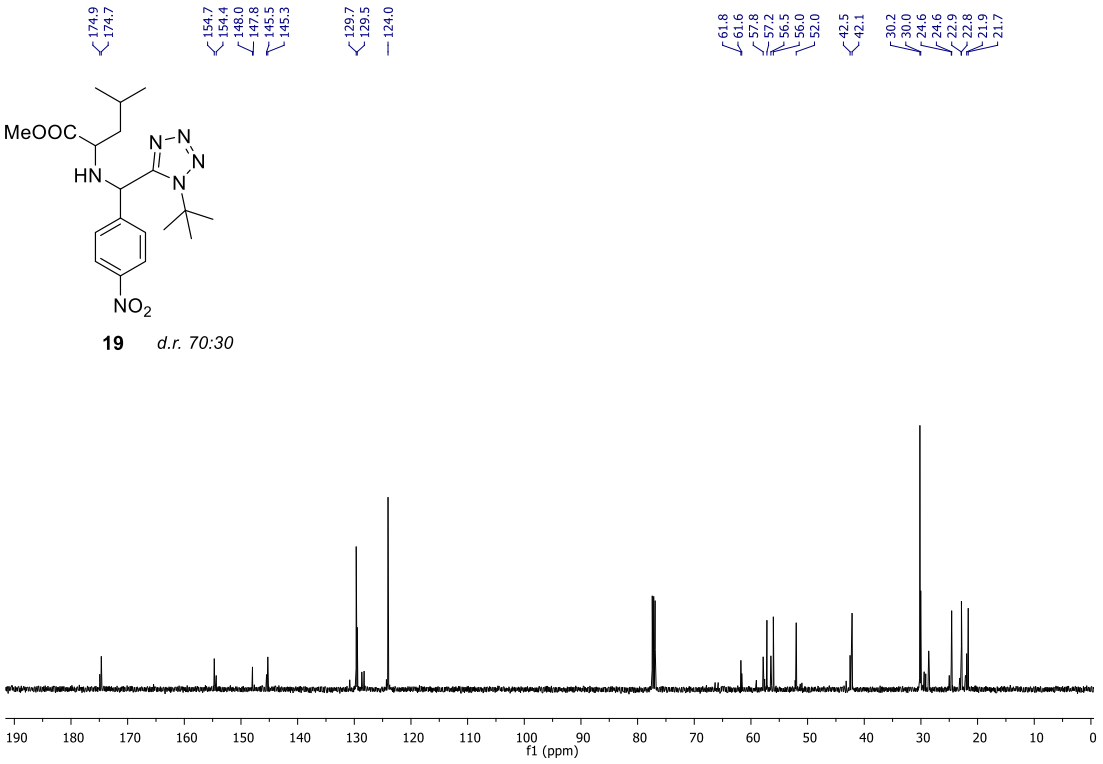


Figure S40. ^{13}C NMR spectrum of 19.

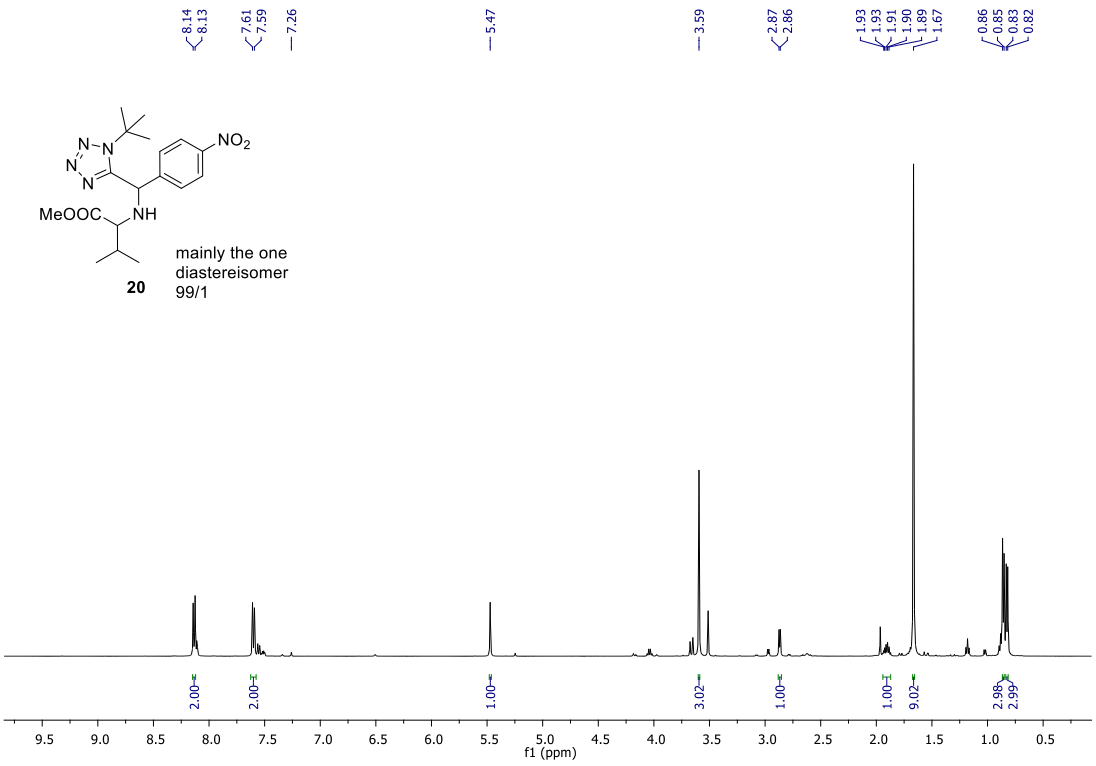


Figure S41. ^{1}H NMR spectrum of 20.

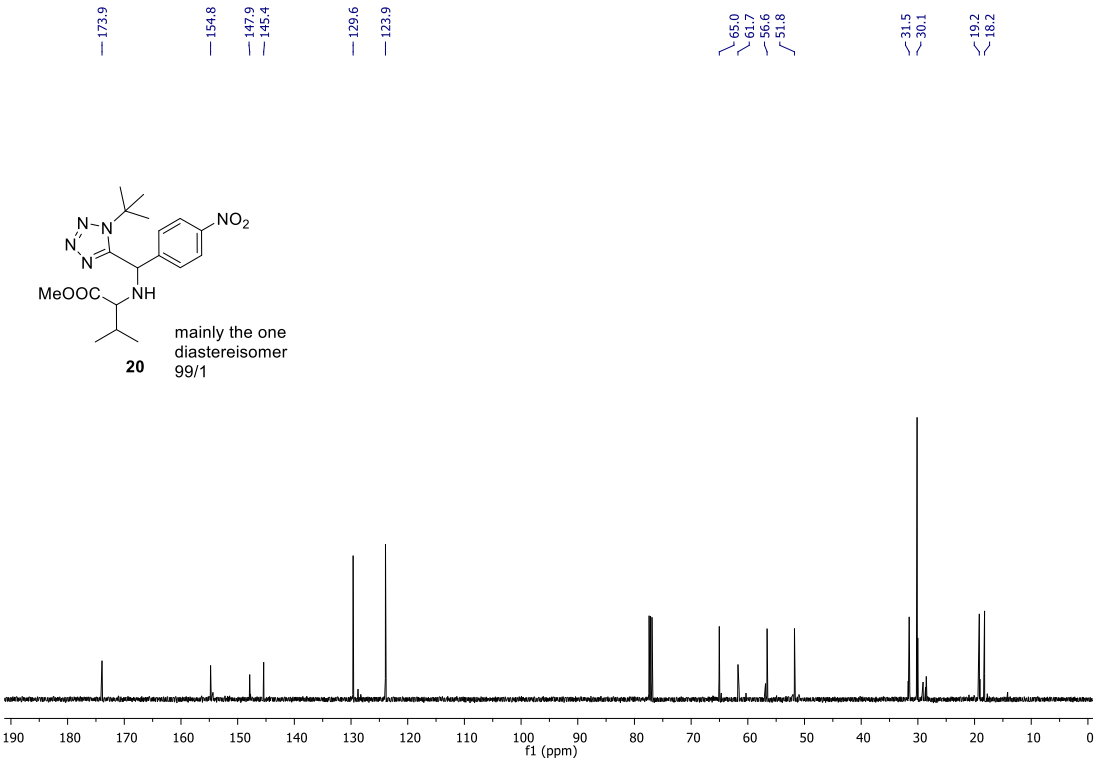


Figure S42. ^{13}C NMR spectrum of 20.

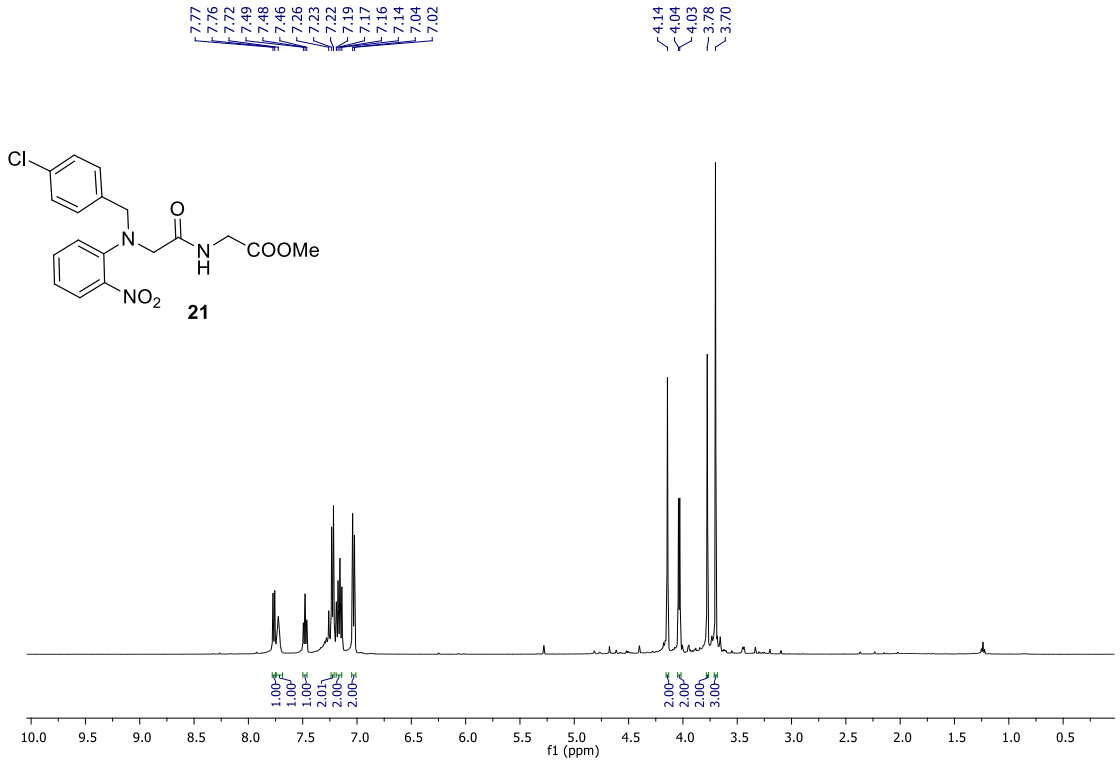


Figure S43. ^{1}H NMR spectrum of 21.

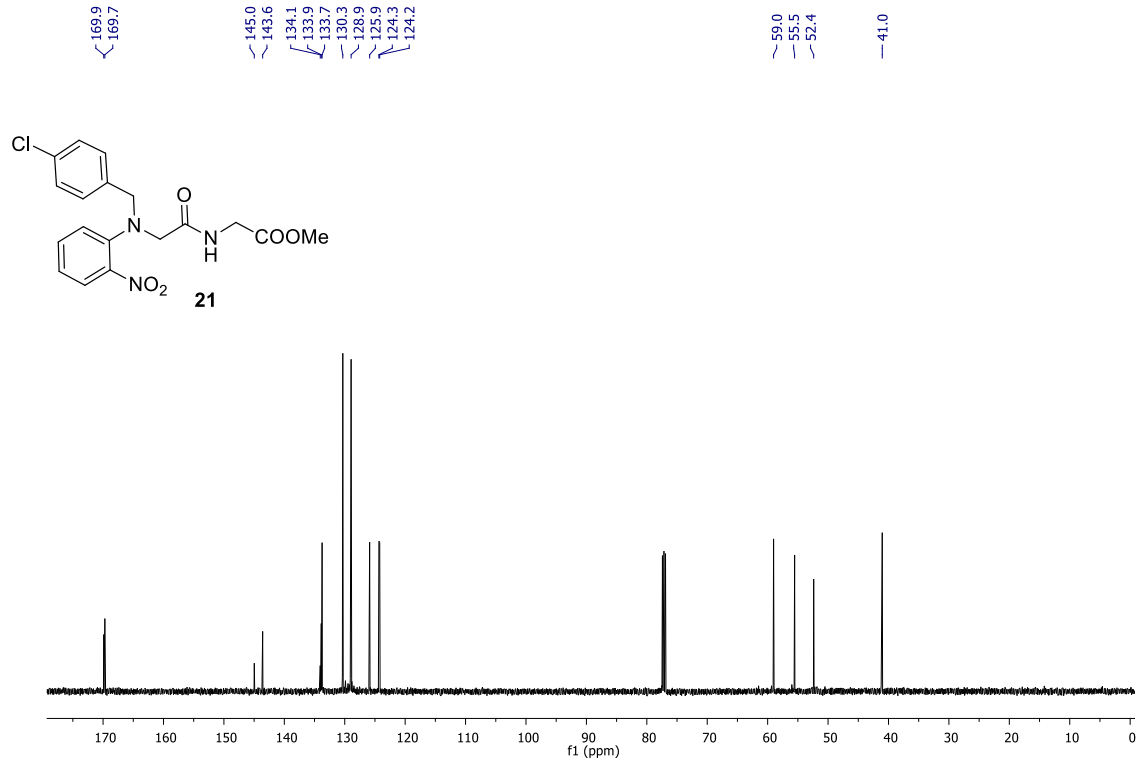


Figure S44. ^{13}C NMR spectrum of 21.

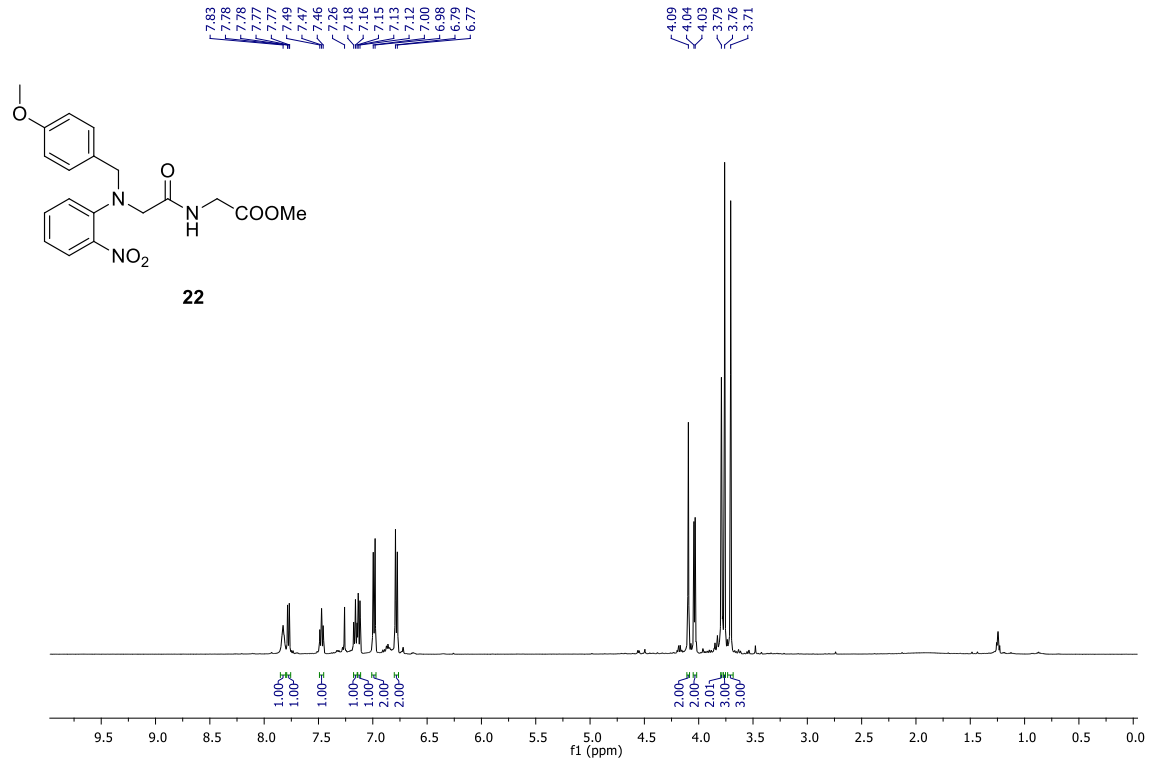


Figure S45. ^{1}H NMR spectrum of 22.

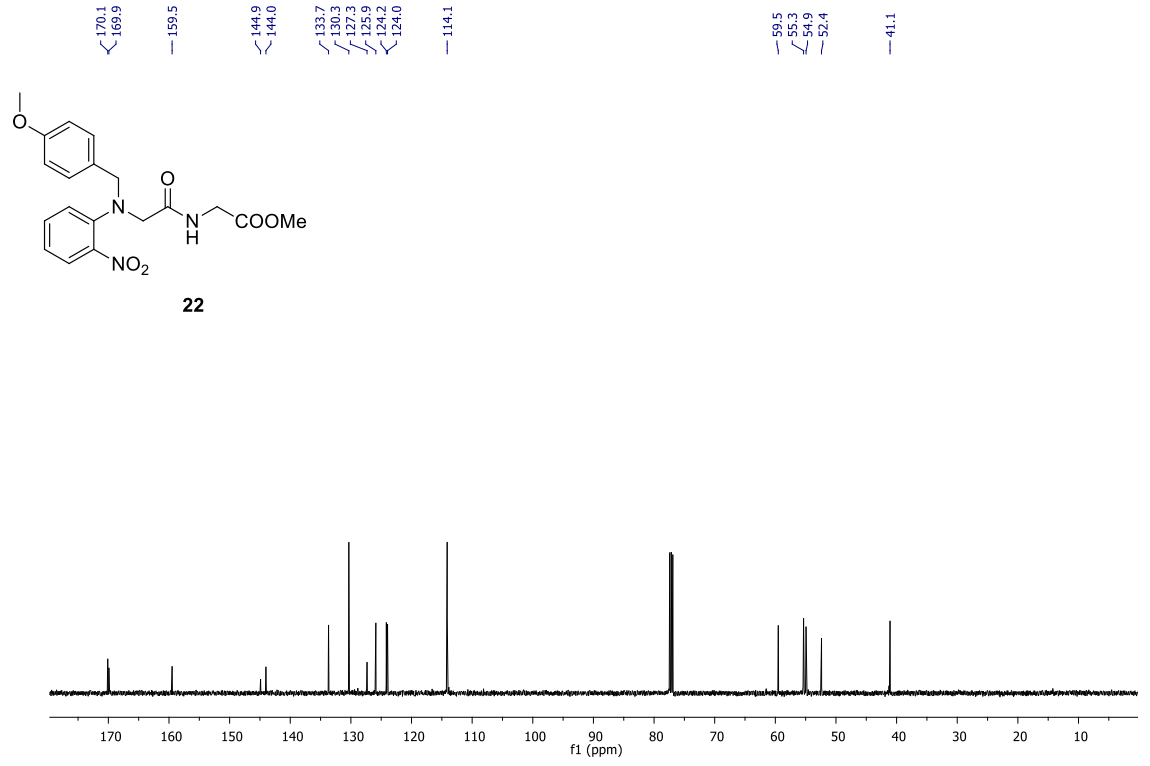


Figure S46. ^{13}C NMR spectrum of 22.

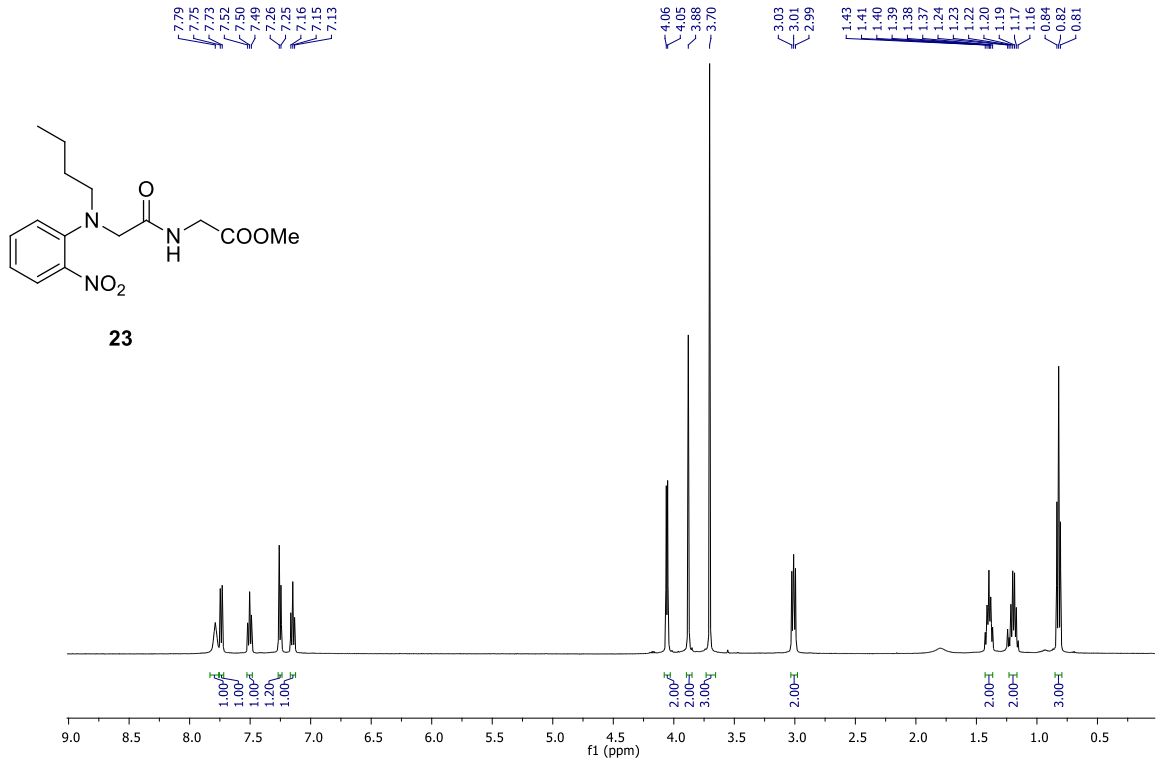


Figure S47. ^{1}H NMR spectrum of 23.

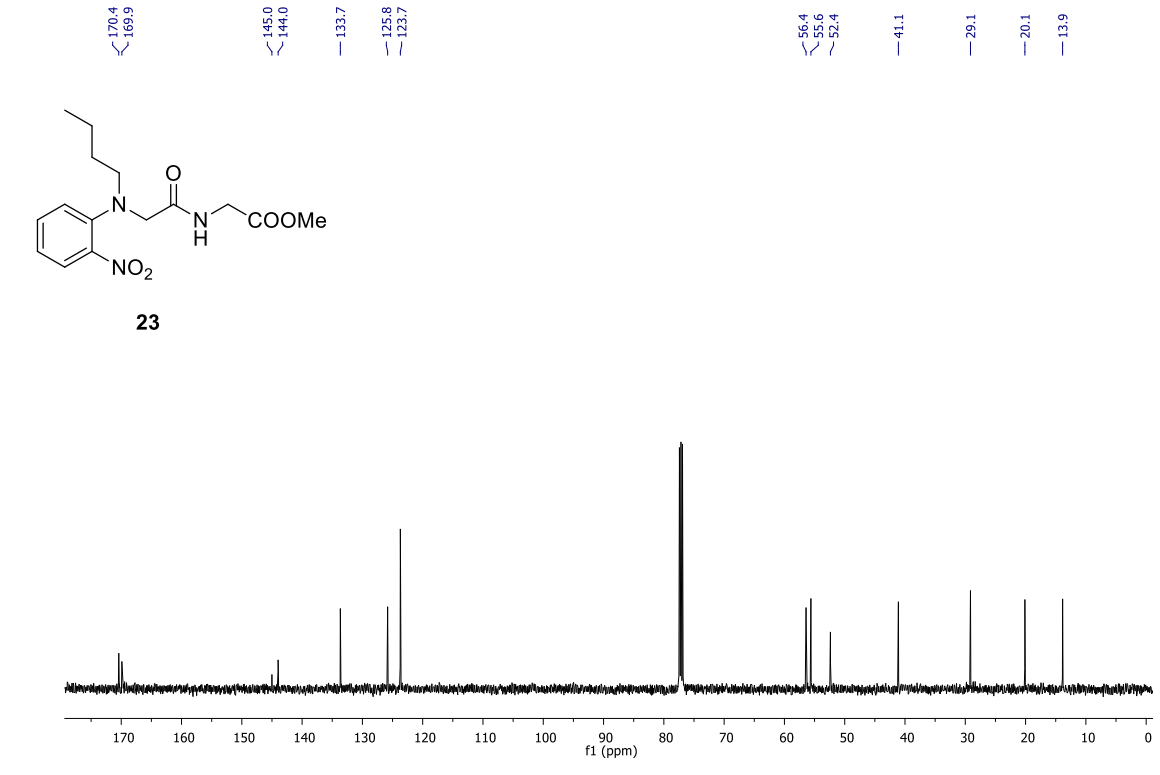


Figure S48. ^{13}C NMR spectrum of 23.

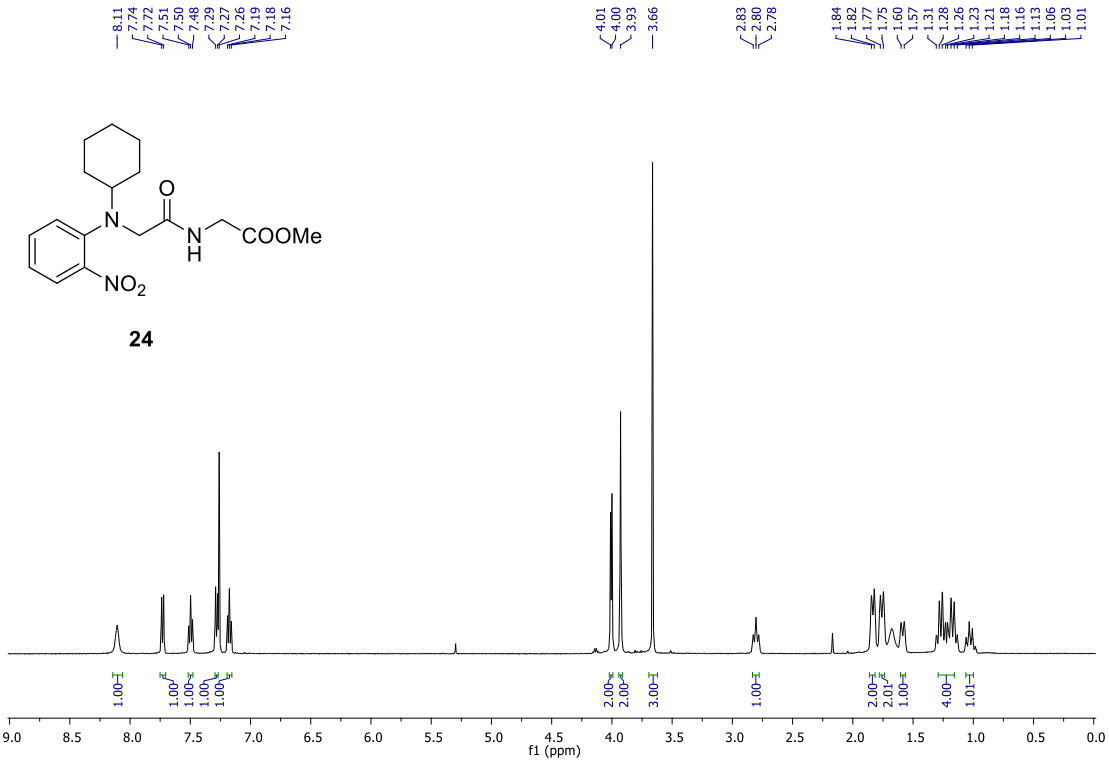


Figure S49. ^{1}H NMR spectrum of 24.

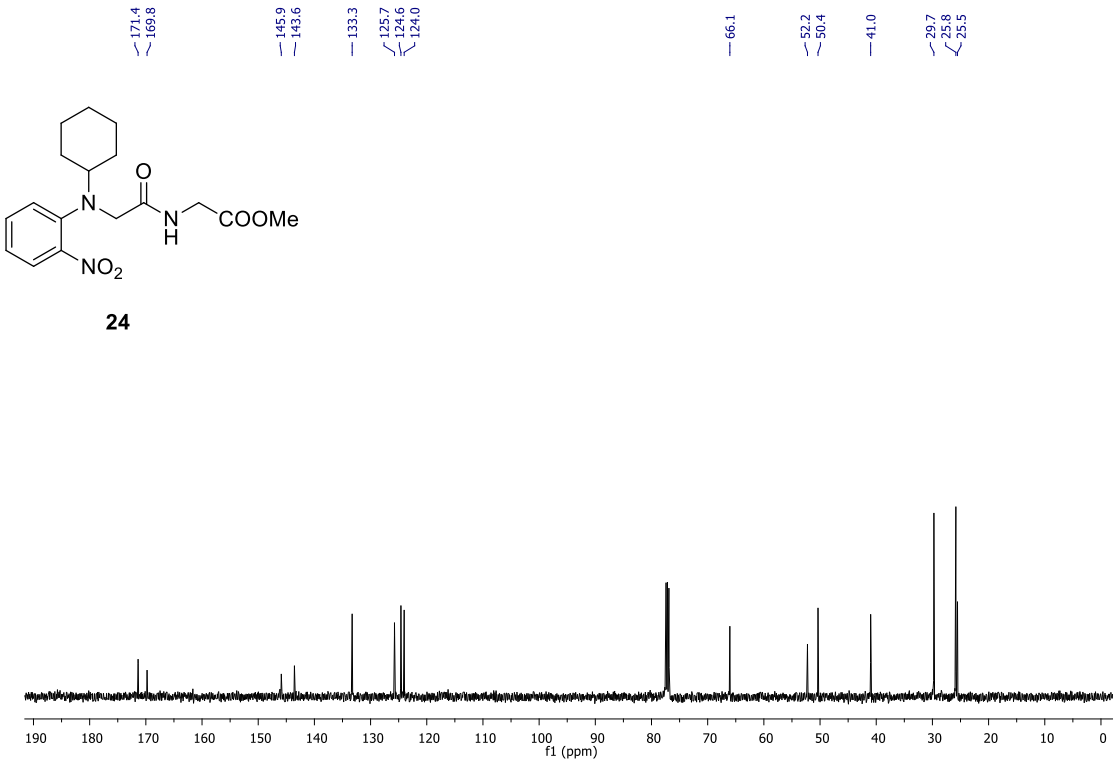


Figure S50. ^{13}C NMR spectrum of 24.

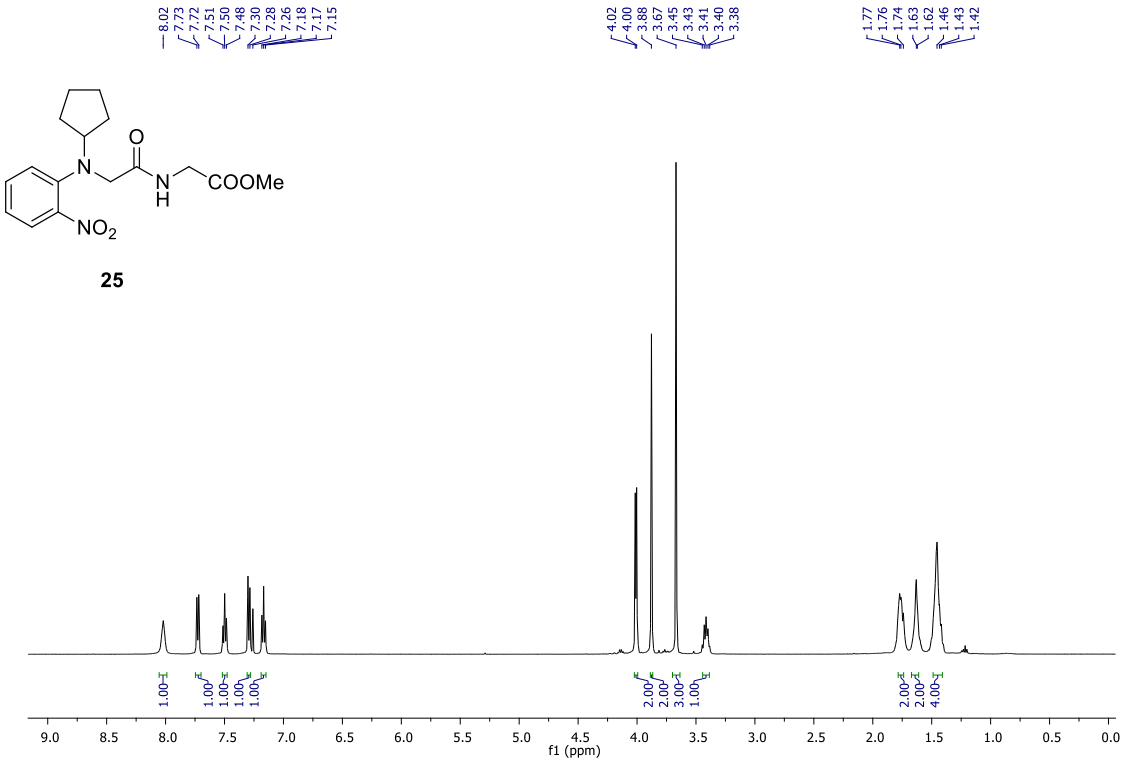


Figure S51. ^{1}H NMR spectrum of 25.

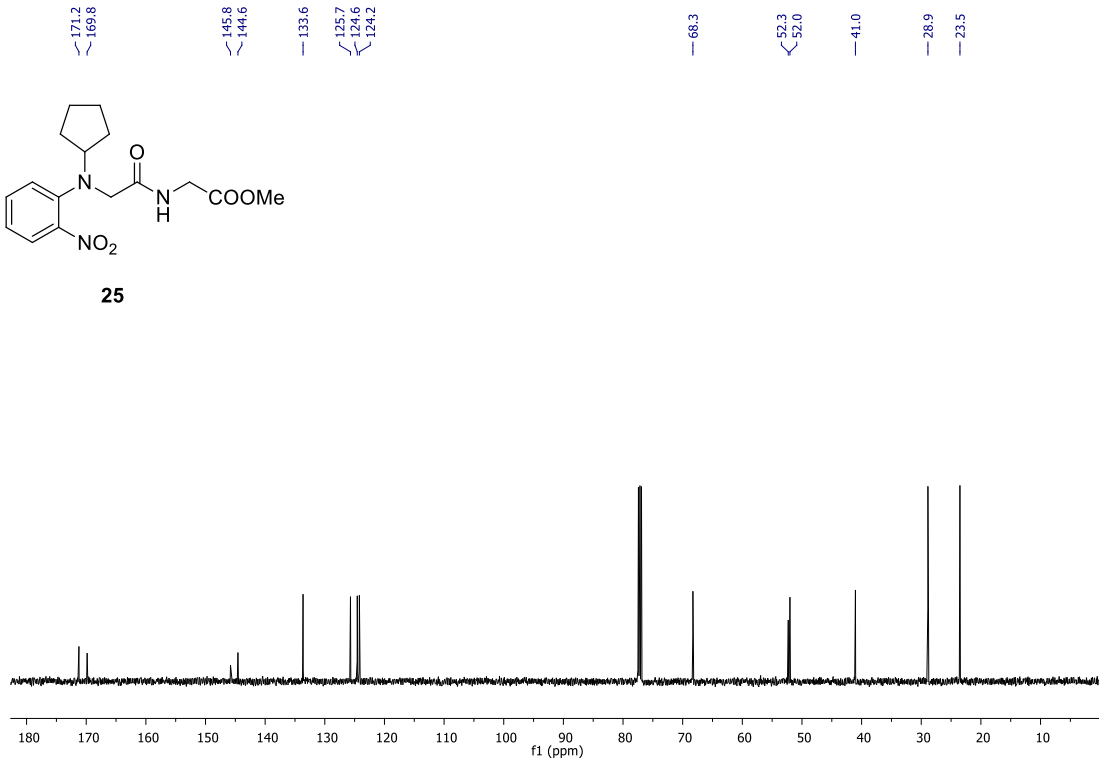


Figure S52. ^{13}C NMR spectrum of 25.

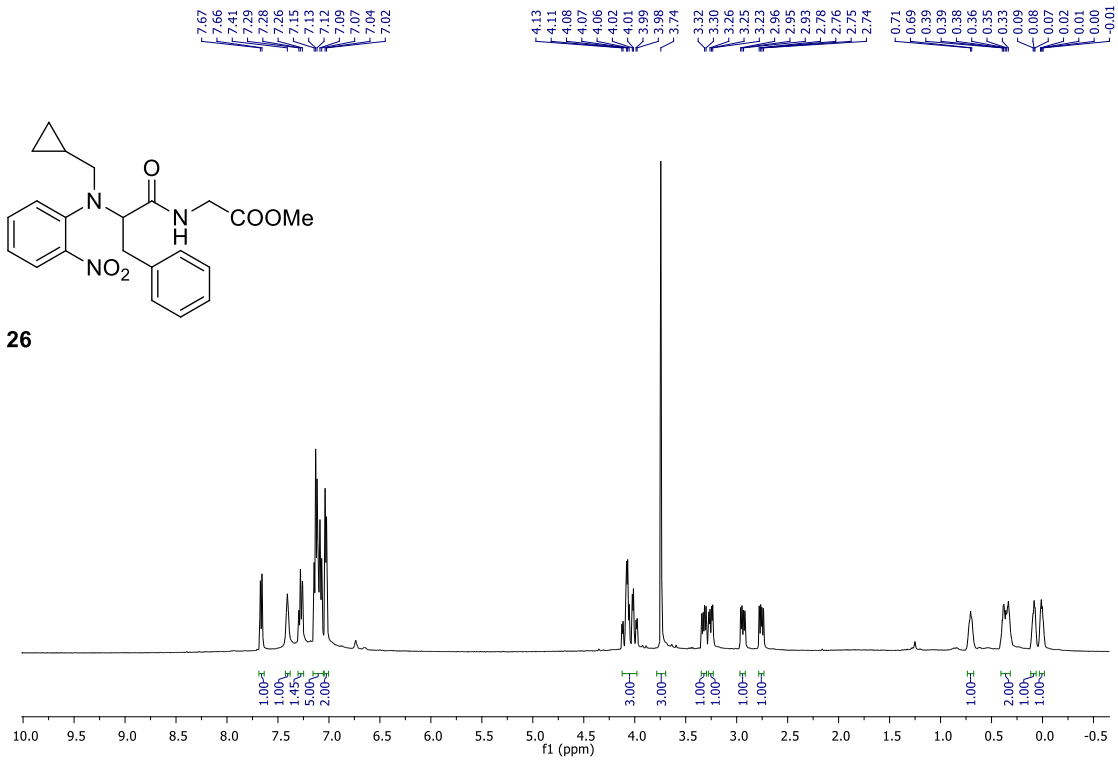


Figure S53. ^{1}H NMR spectrum of 26.

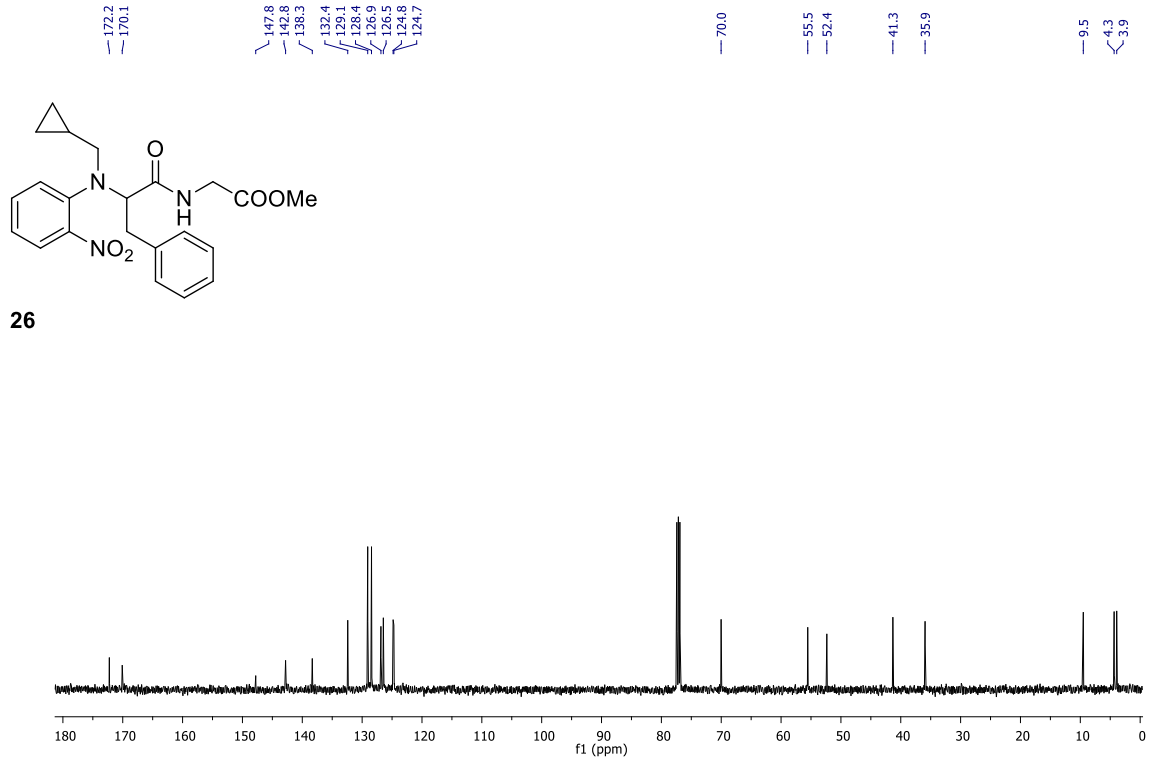


Figure S54. ^{13}C NMR spectrum of 26.

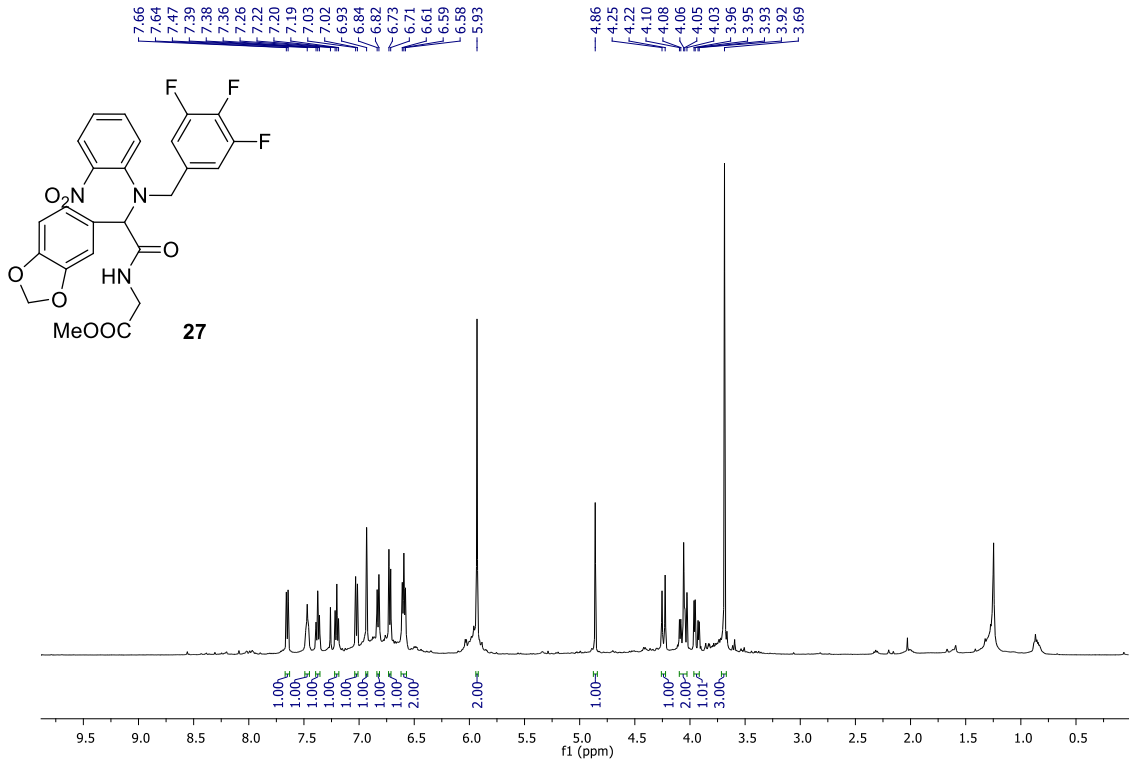


Figure S55. ^{1}H NMR spectrum of 27.

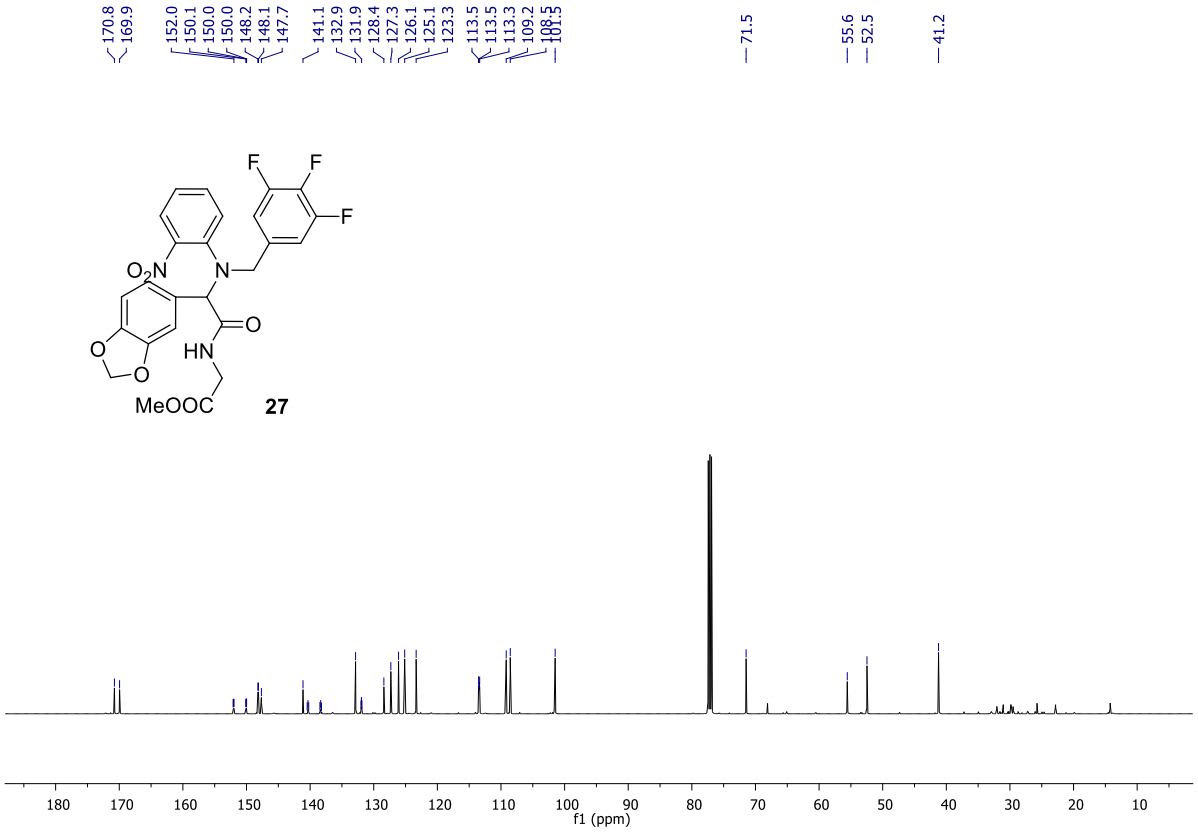


Figure S56. ^{13}C NMR spectrum of 27.

^{19}F NMR of the nitro substituted MCR compound 27

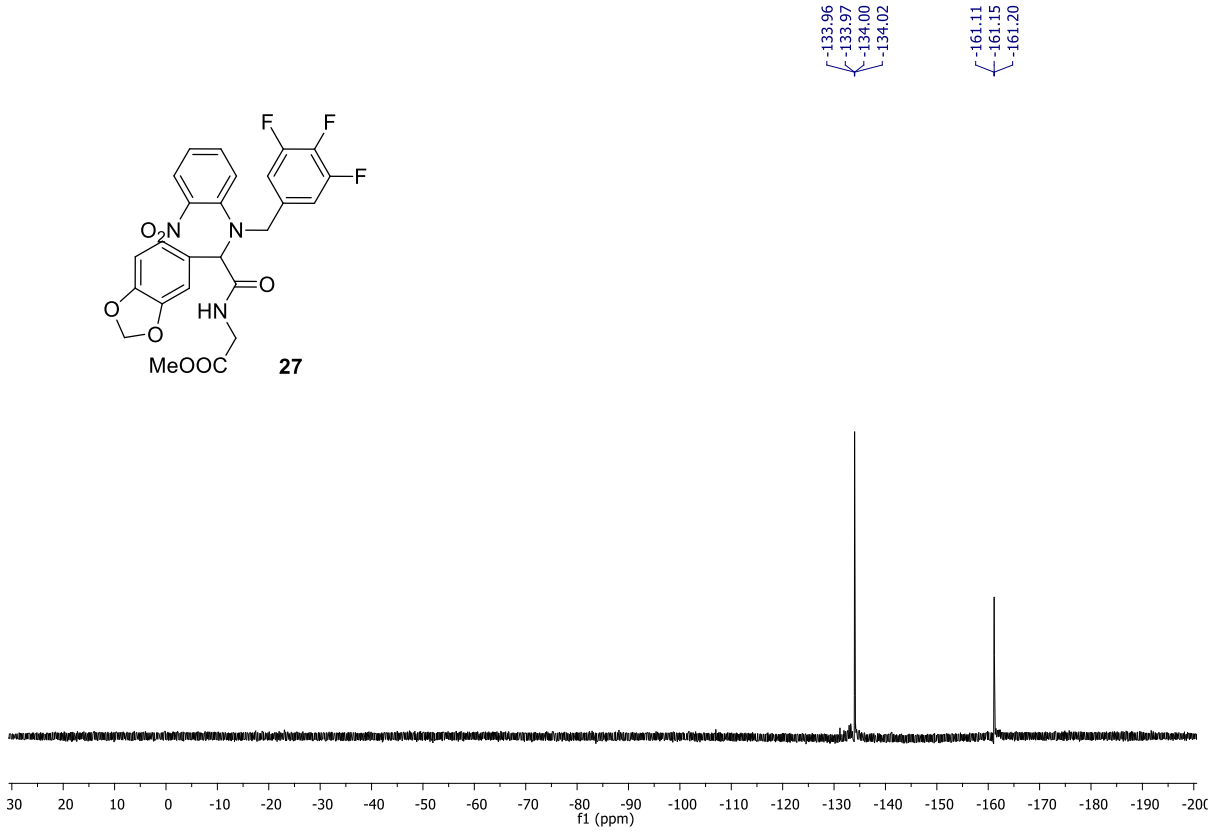


Figure S57. ^{19}F NMR spectrum of 27.

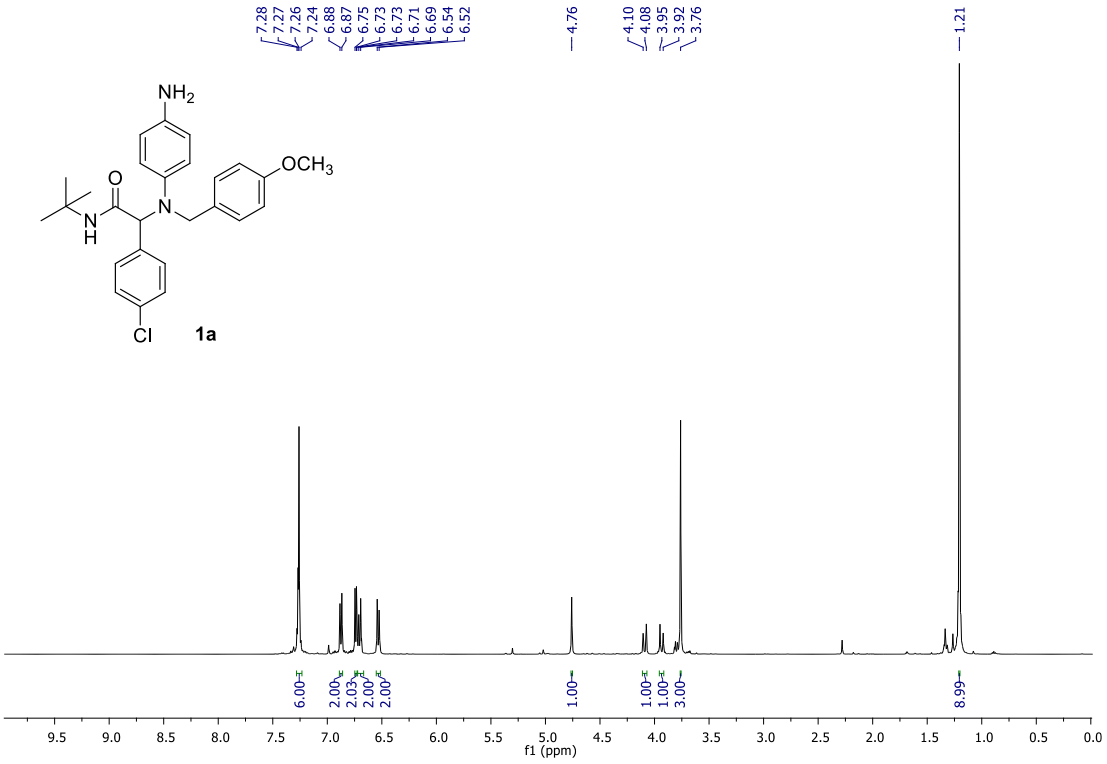


Figure S58. ^{1}H NMR spectrum of 1a.

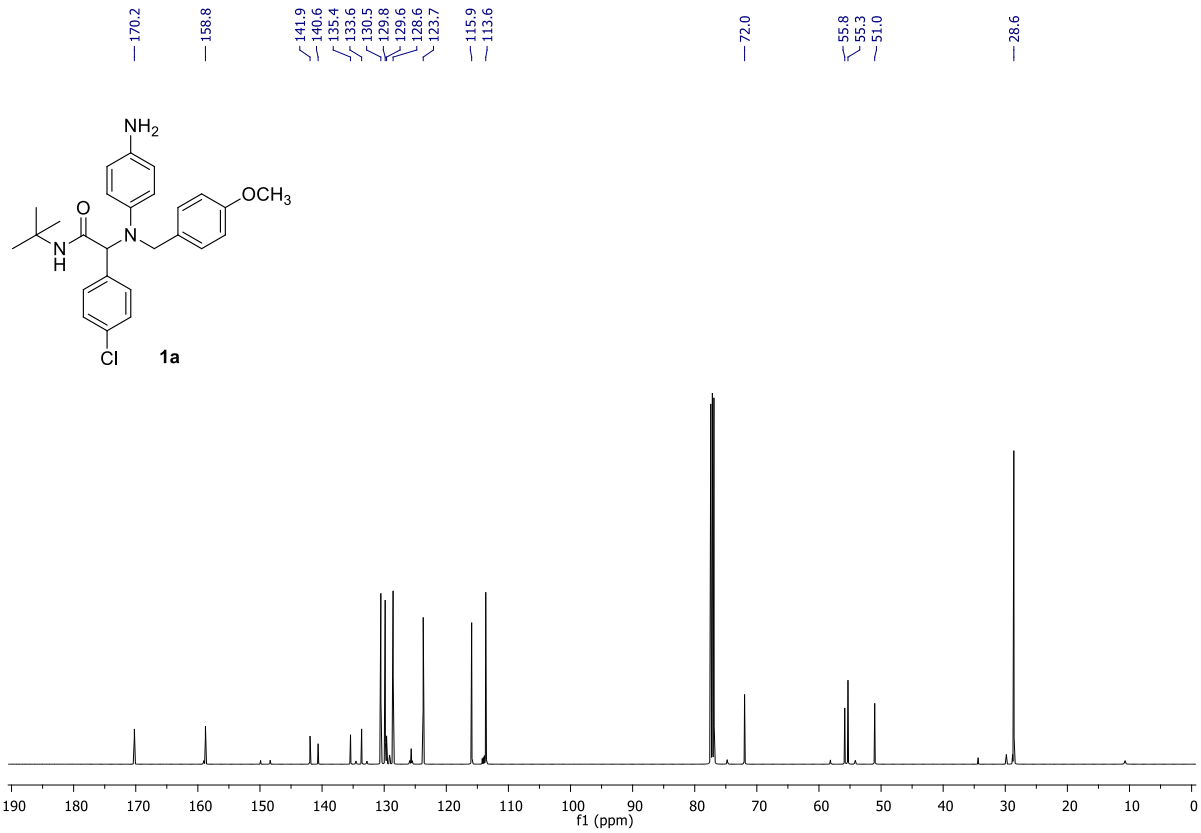


Figure S59. ^{13}C NMR spectrum of 1a.

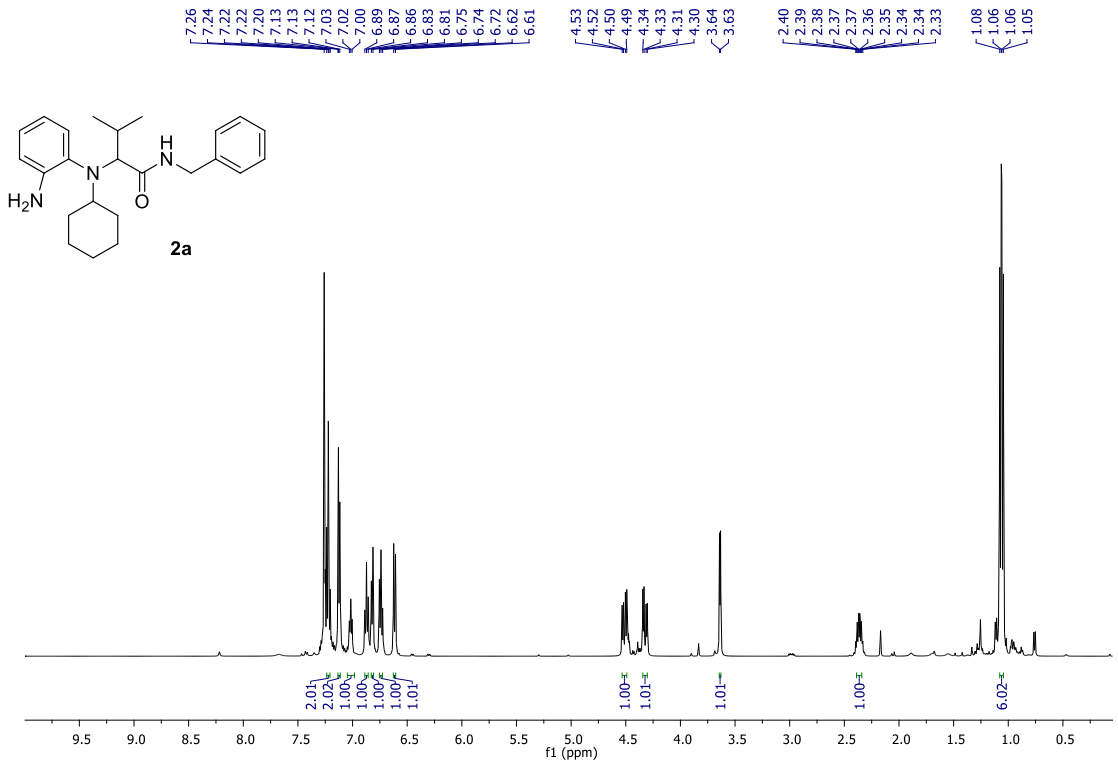


Figure S60. ^{1}H NMR spectrum of 2a.

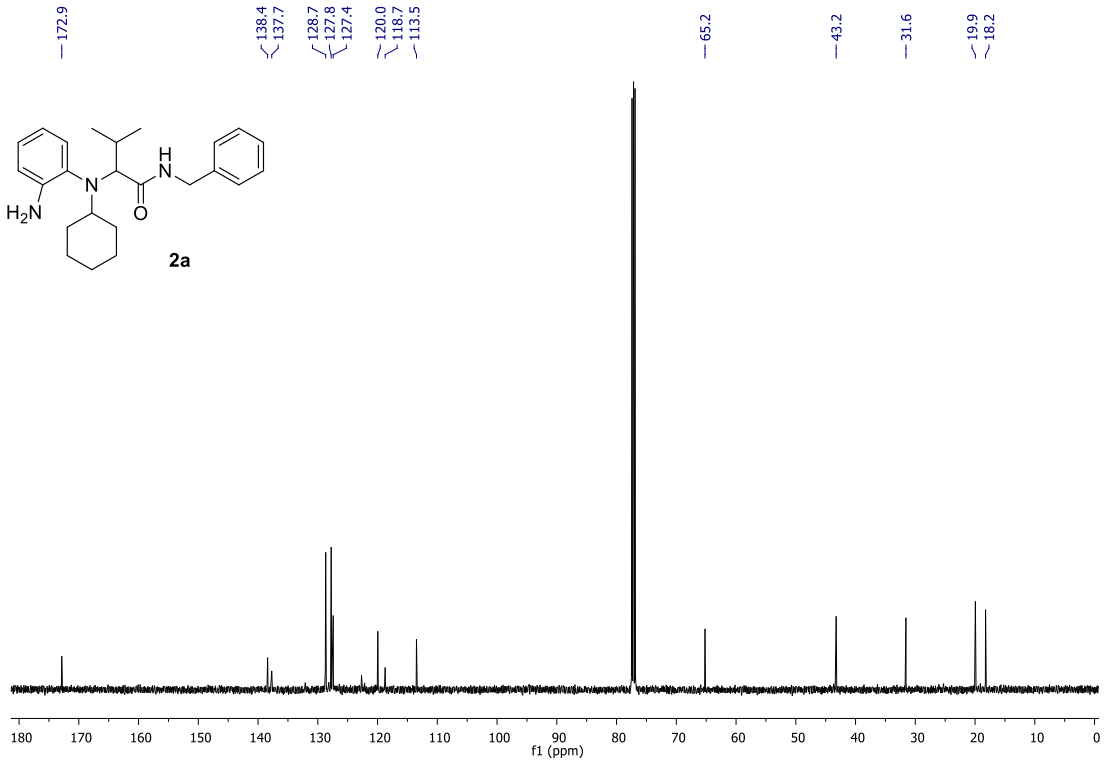


Figure S61. ^{13}C NMR spectrum of 2a.

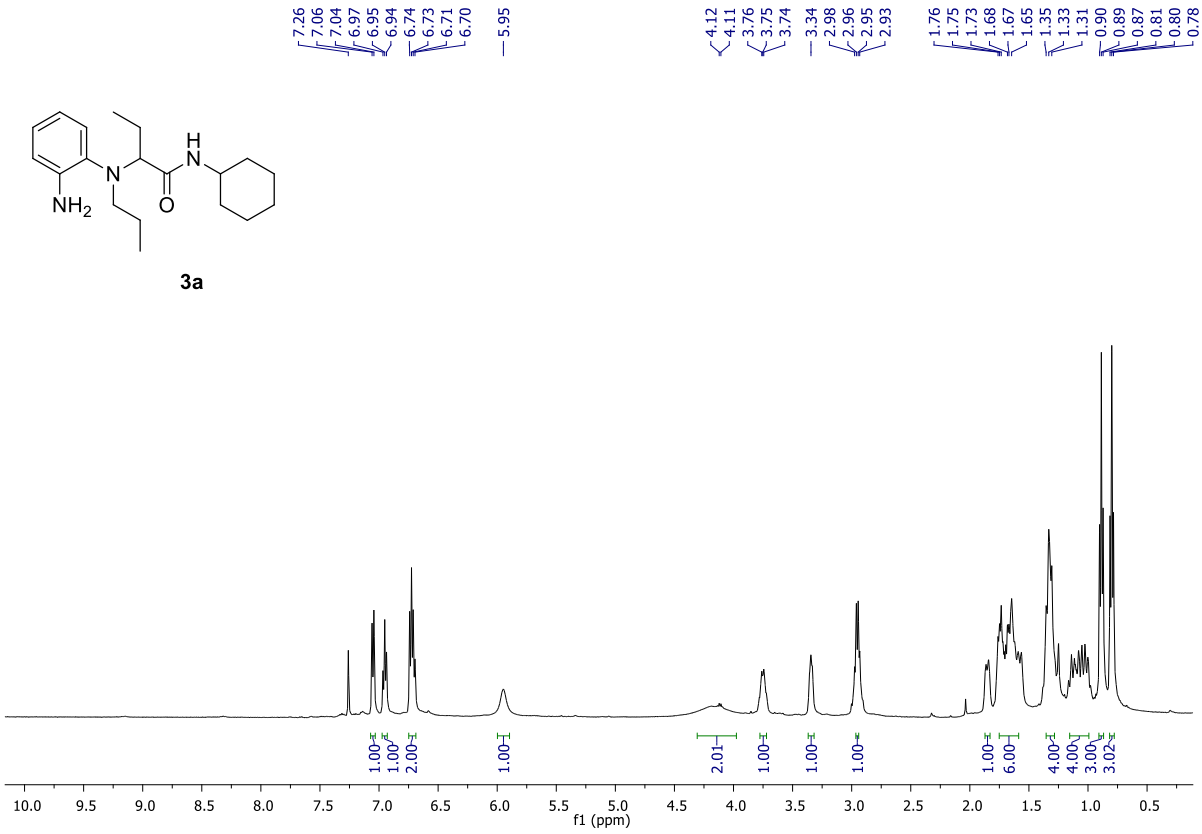


Figure S62. ^{1}H NMR spectrum of 3a.

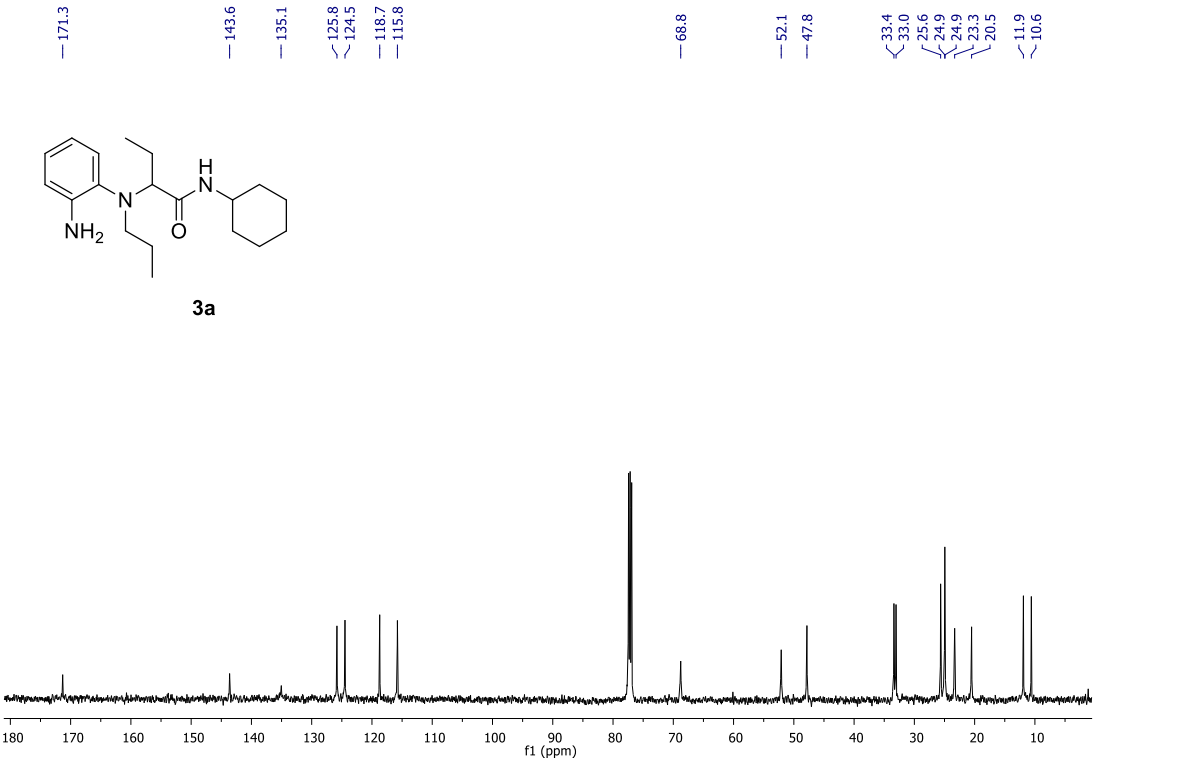


Figure S63. ^{13}C NMR spectrum of 3a.

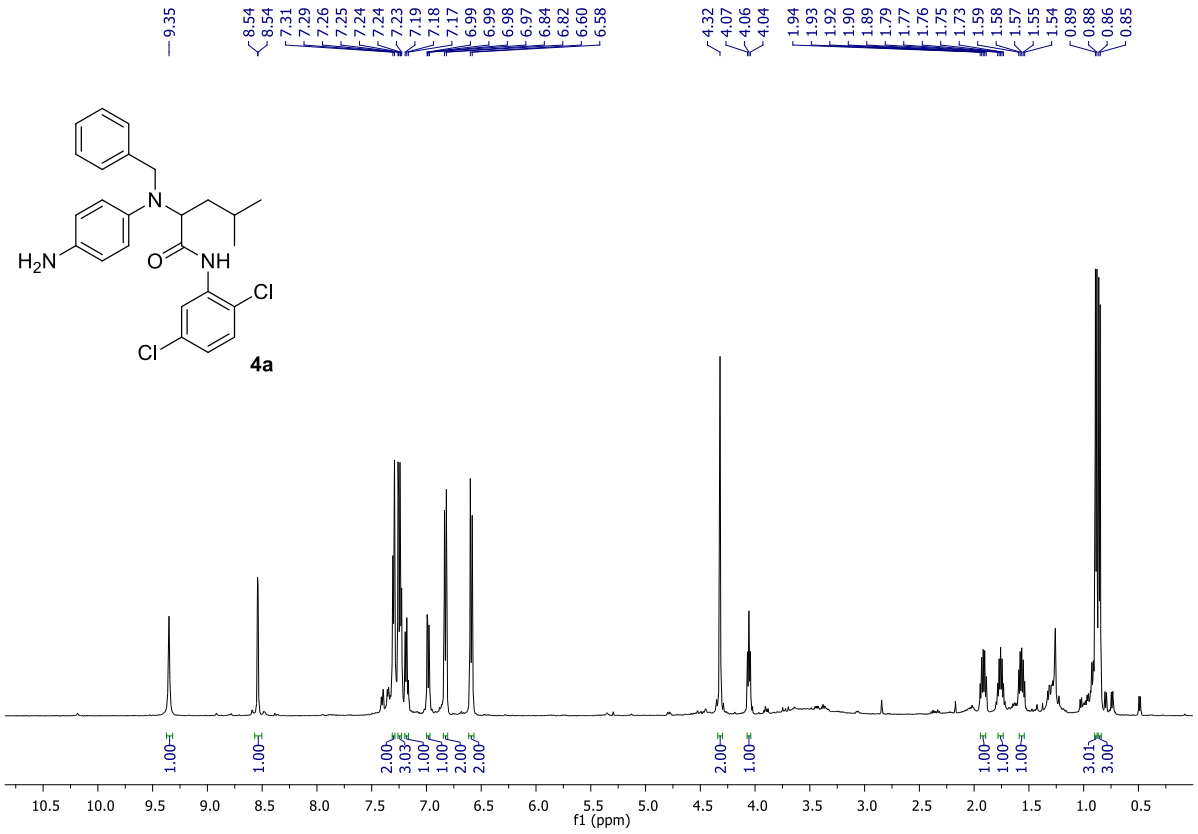


Figure S64. ^{1}H NMR spectrum of 4a.

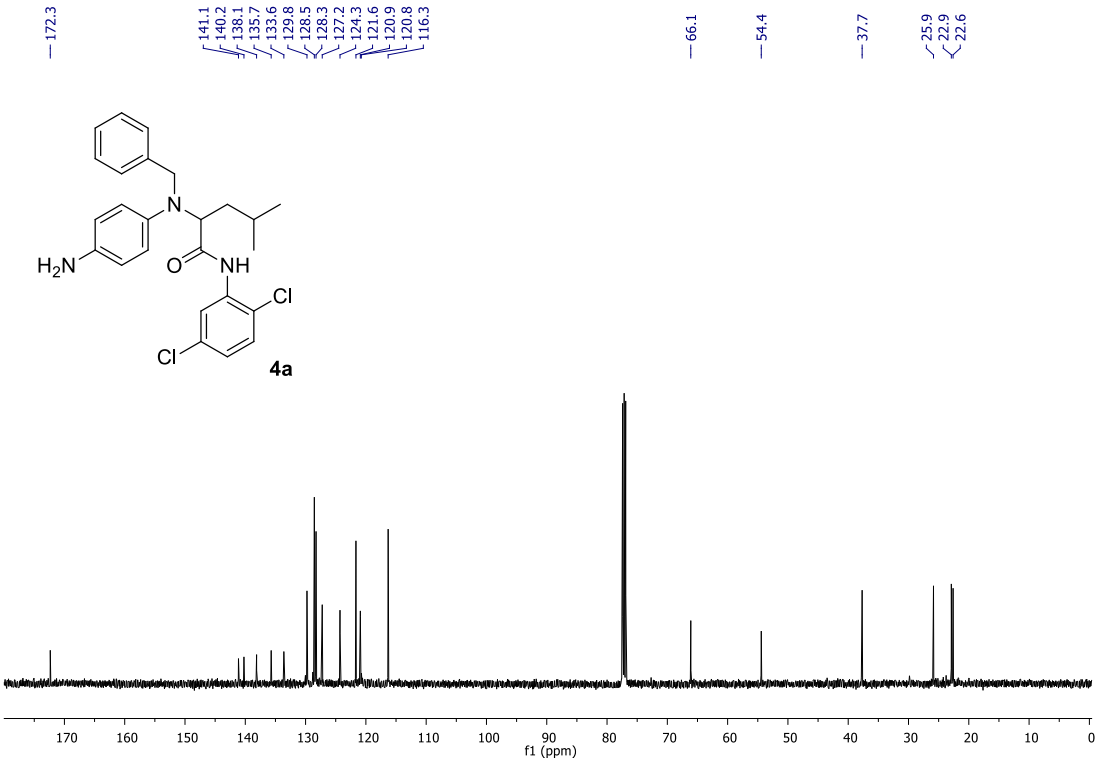


Figure S65. ^{13}C NMR spectrum of 4a.

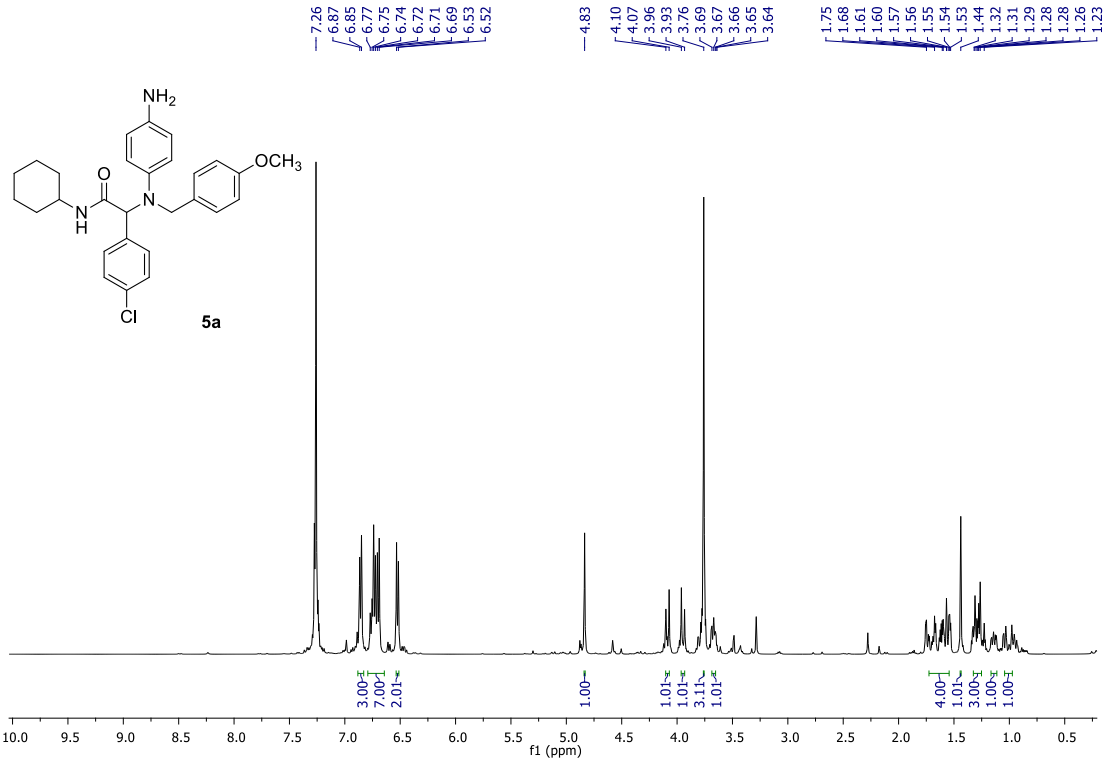


Figure S66. ^{1}H NMR spectrum of 5a.

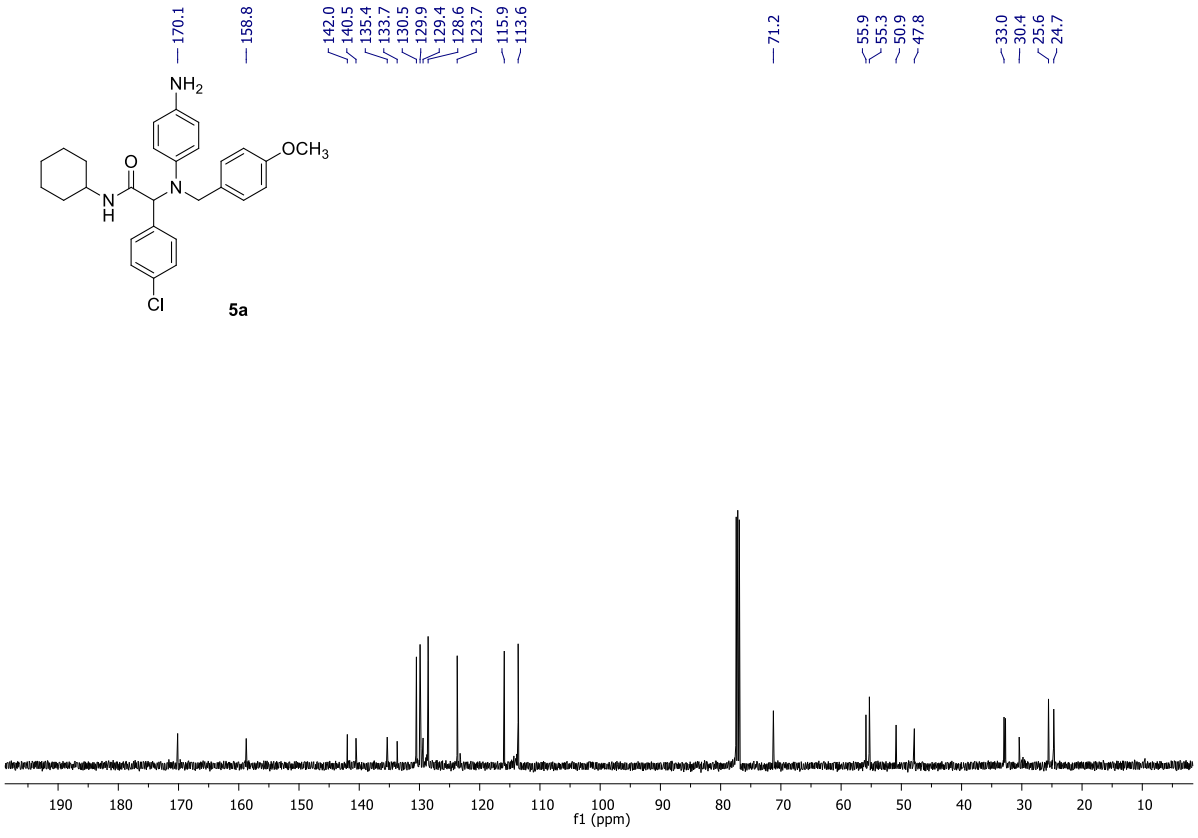


Figure S67. ^{13}C NMR spectrum of 5a.

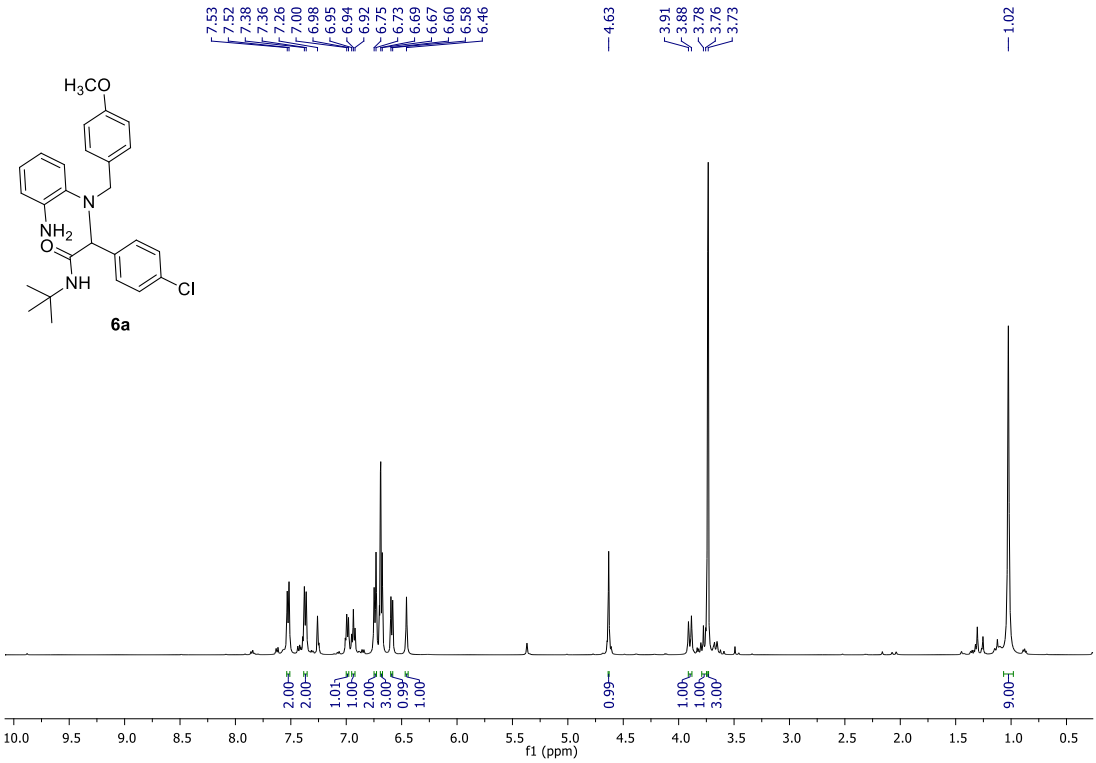


Figure S68. ^{1}H NMR spectrum of 6a.

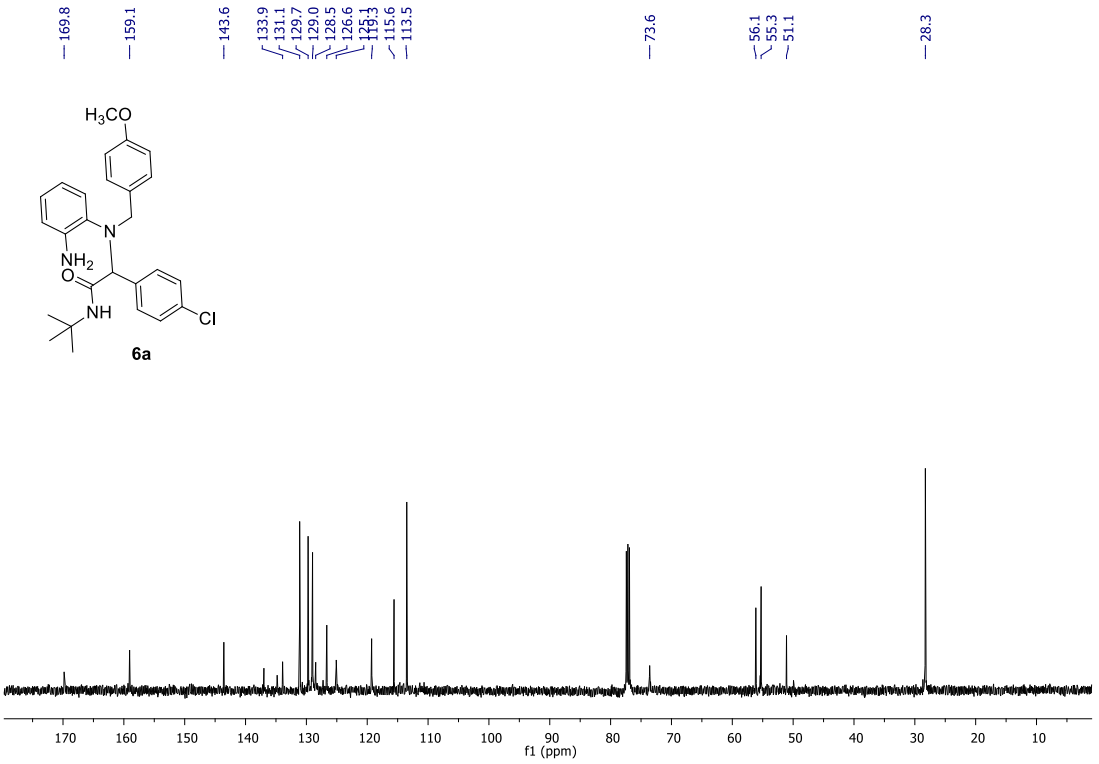


Figure S69. ^{13}C NMR spectrum of 6a.

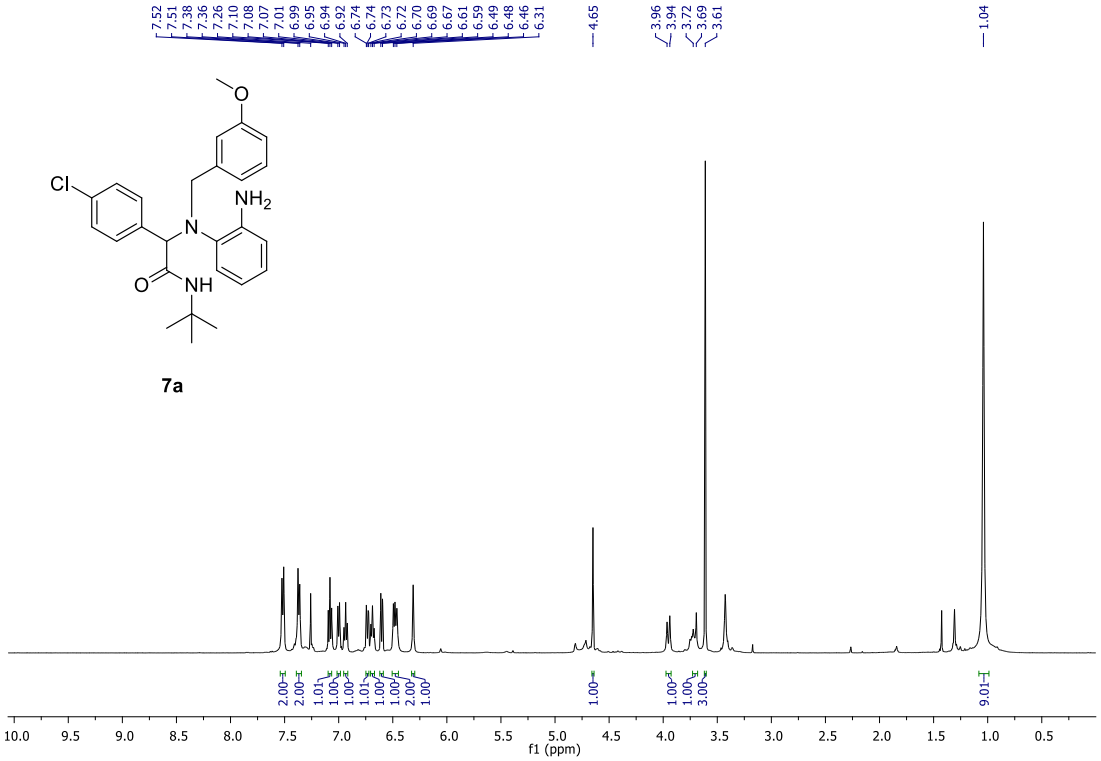


Figure S70. ^{1}H NMR spectrum of 7a.

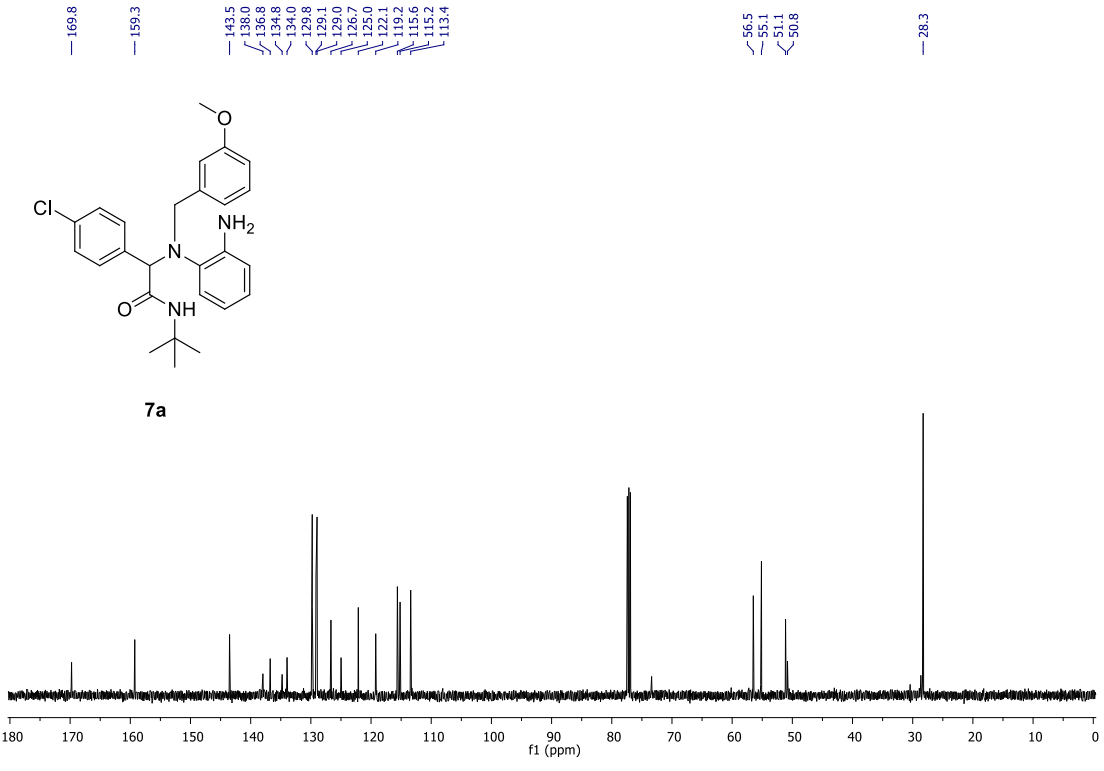


Figure S71. ^{13}C NMR spectrum of 7a.

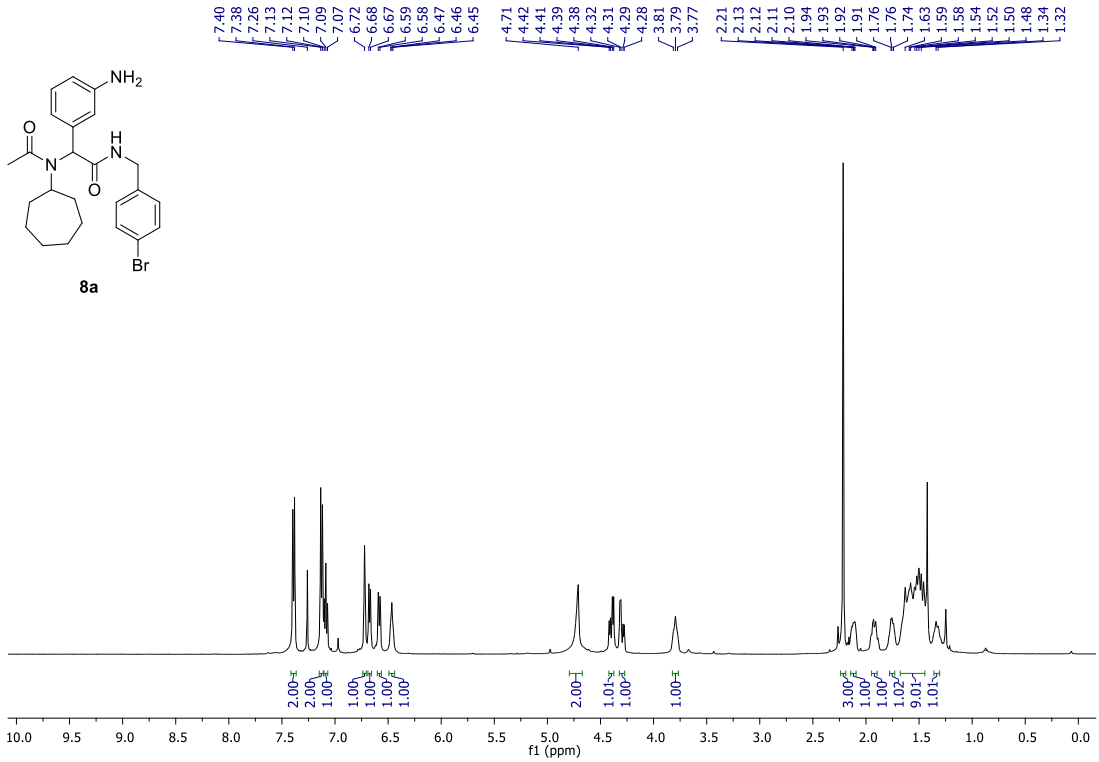


Figure S72. ^{1}H NMR spectrum of 8a.

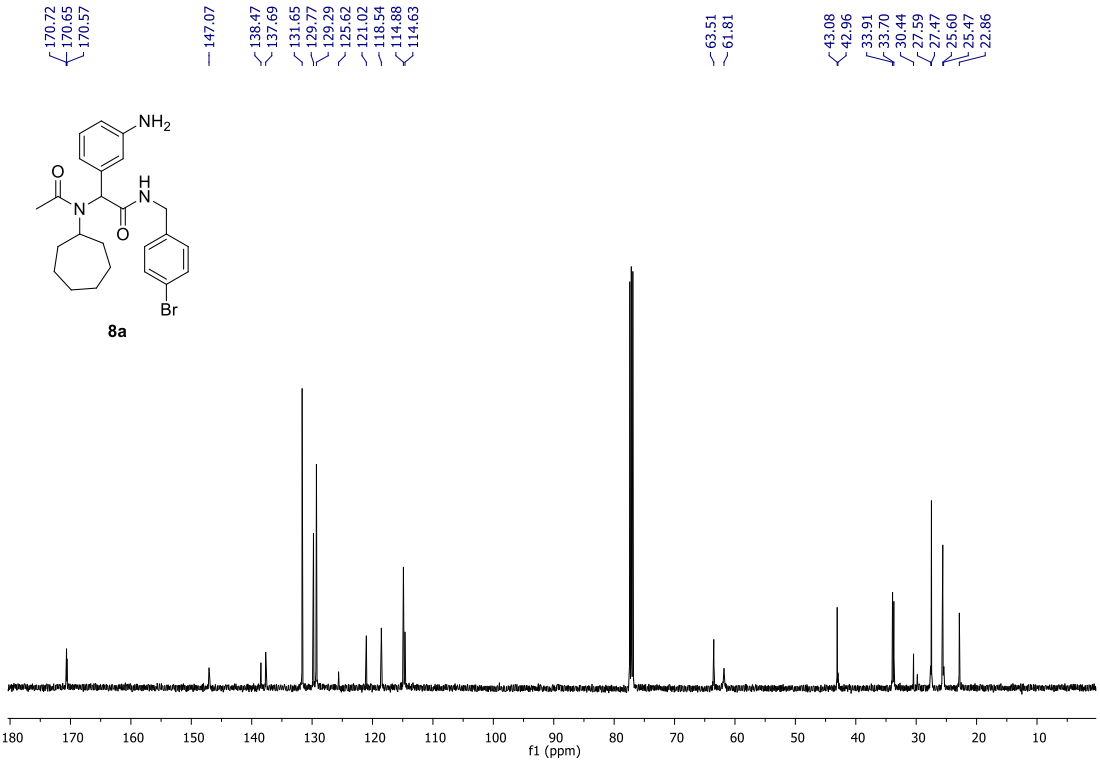


Figure S73. ^{13}C NMR spectrum of 8a.

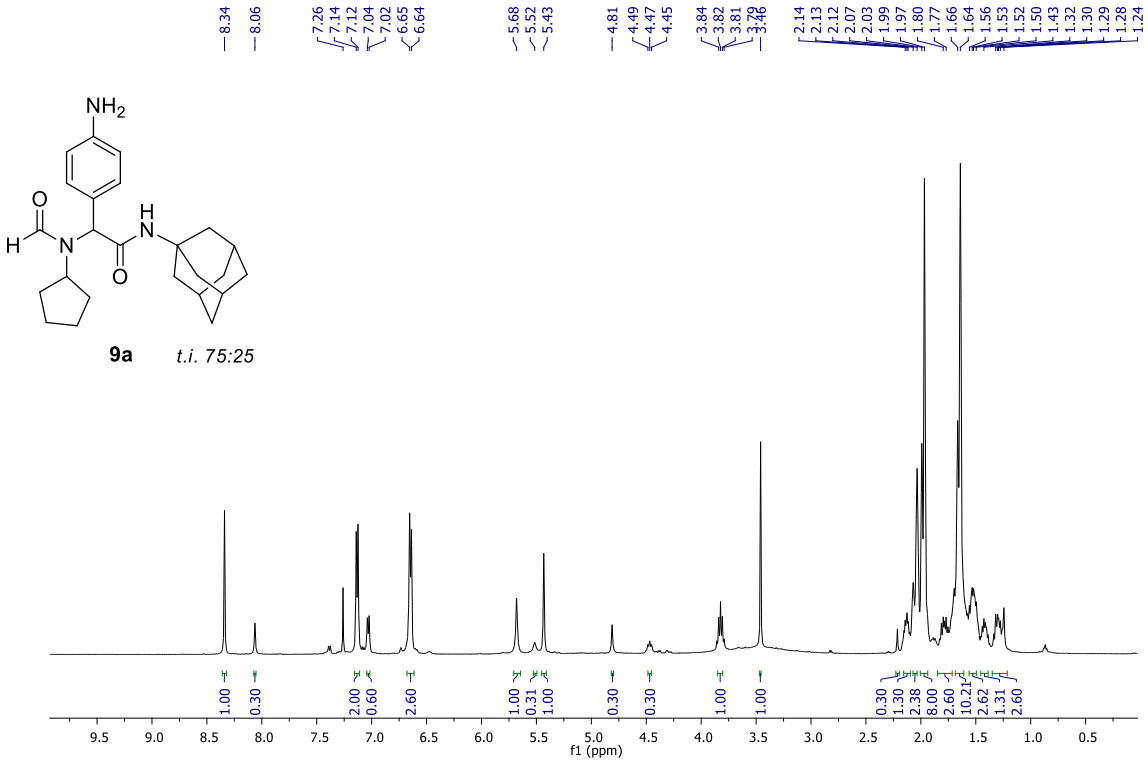


Figure S74. ^{1}H NMR spectrum of 9a.

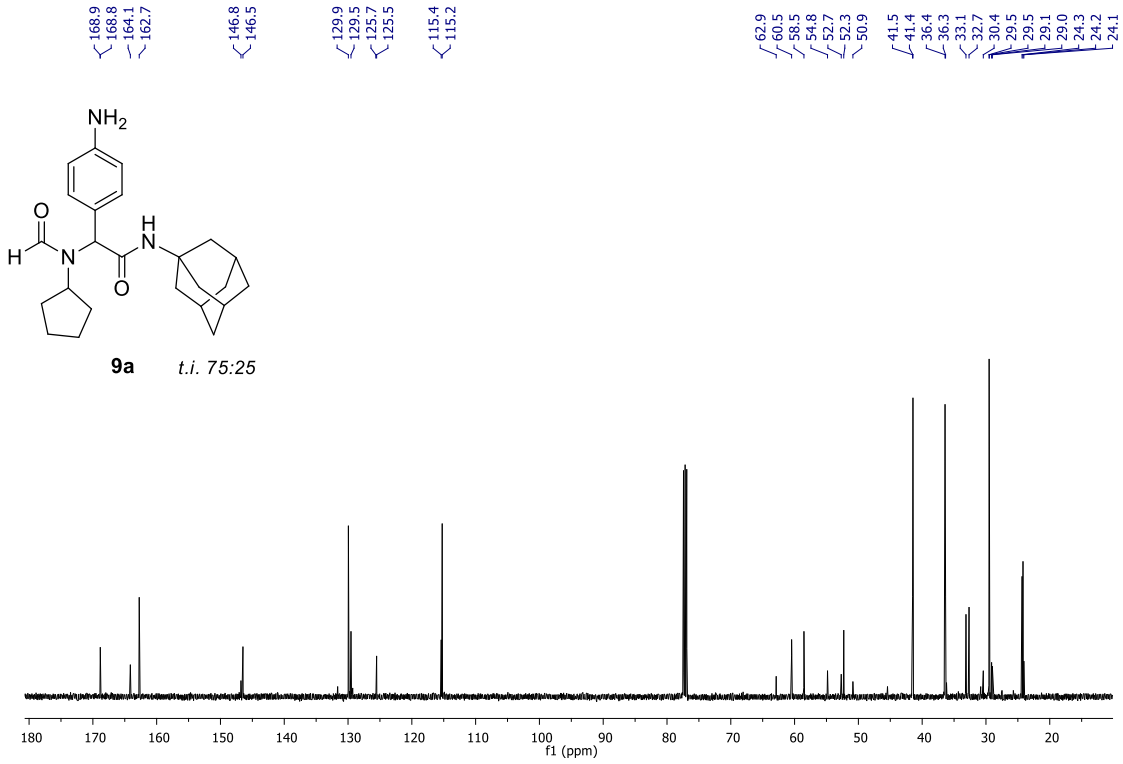


Figure S75. ^{13}C NMR spectrum of 9a.

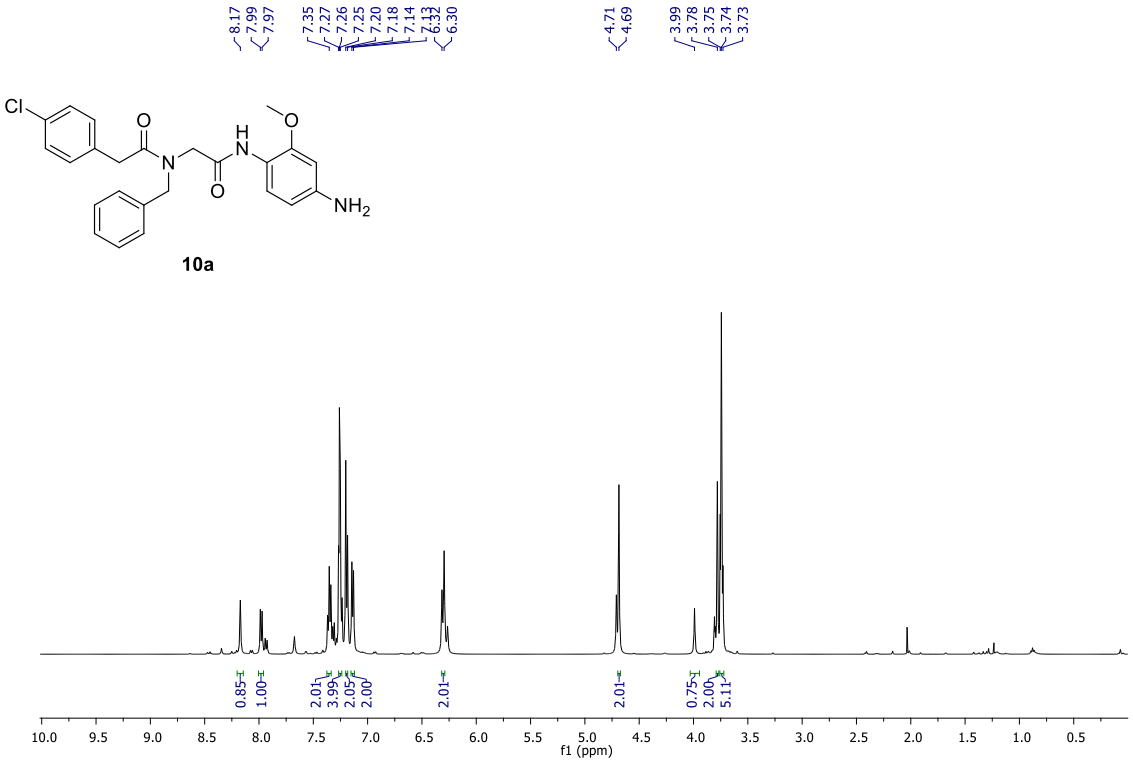


Figure S76. ^{1}H NMR spectrum of 10a.

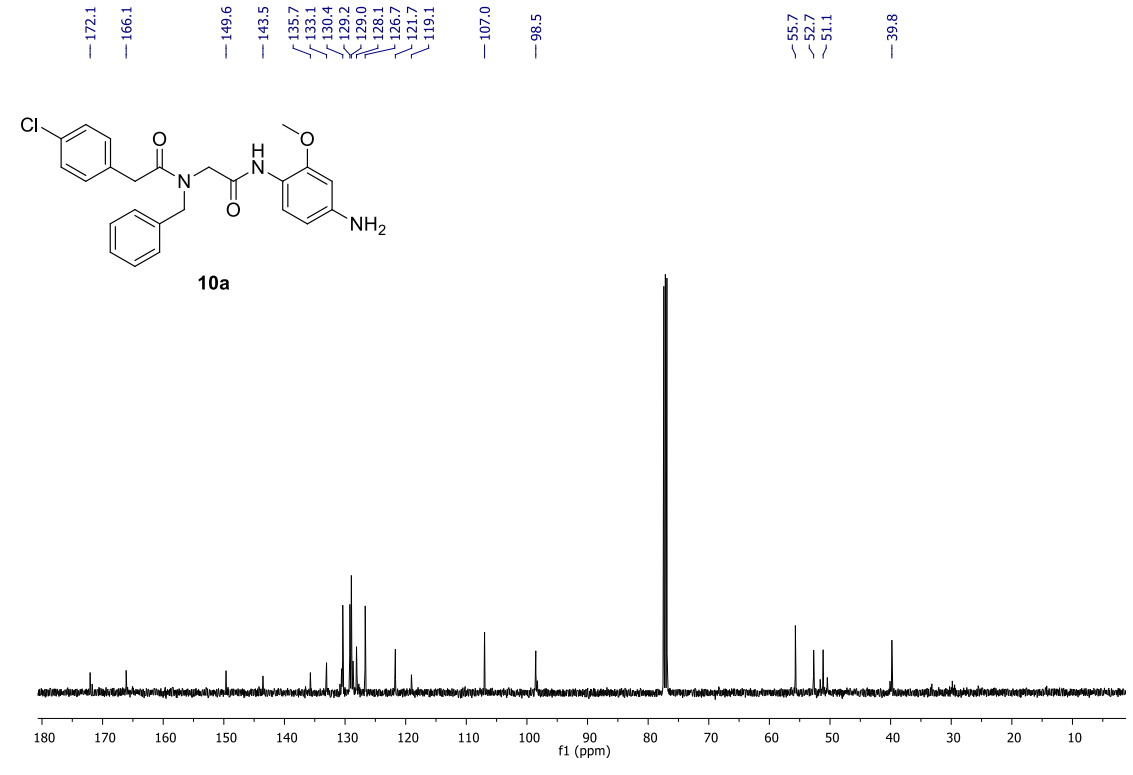


Figure S77. ^{13}C NMR spectrum of 10a.

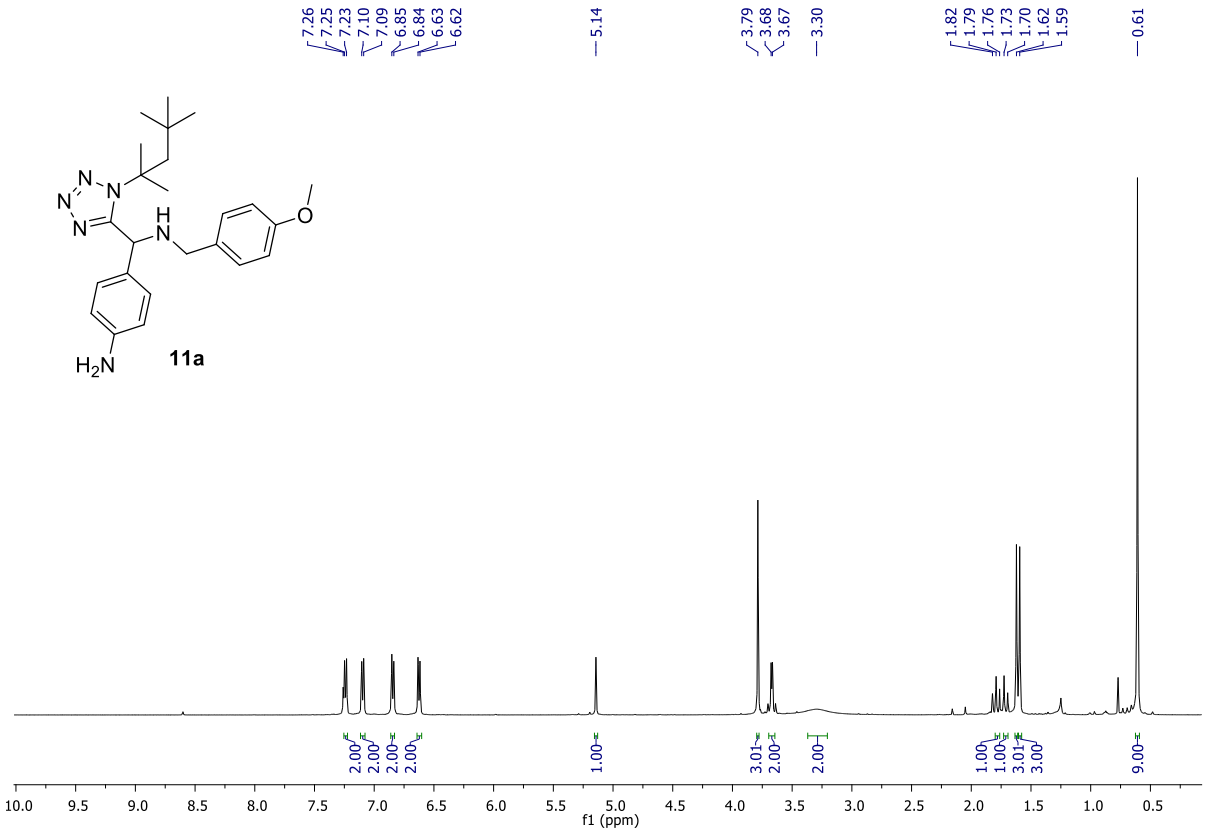


Figure S78. ^{1}H NMR spectrum of 11a.

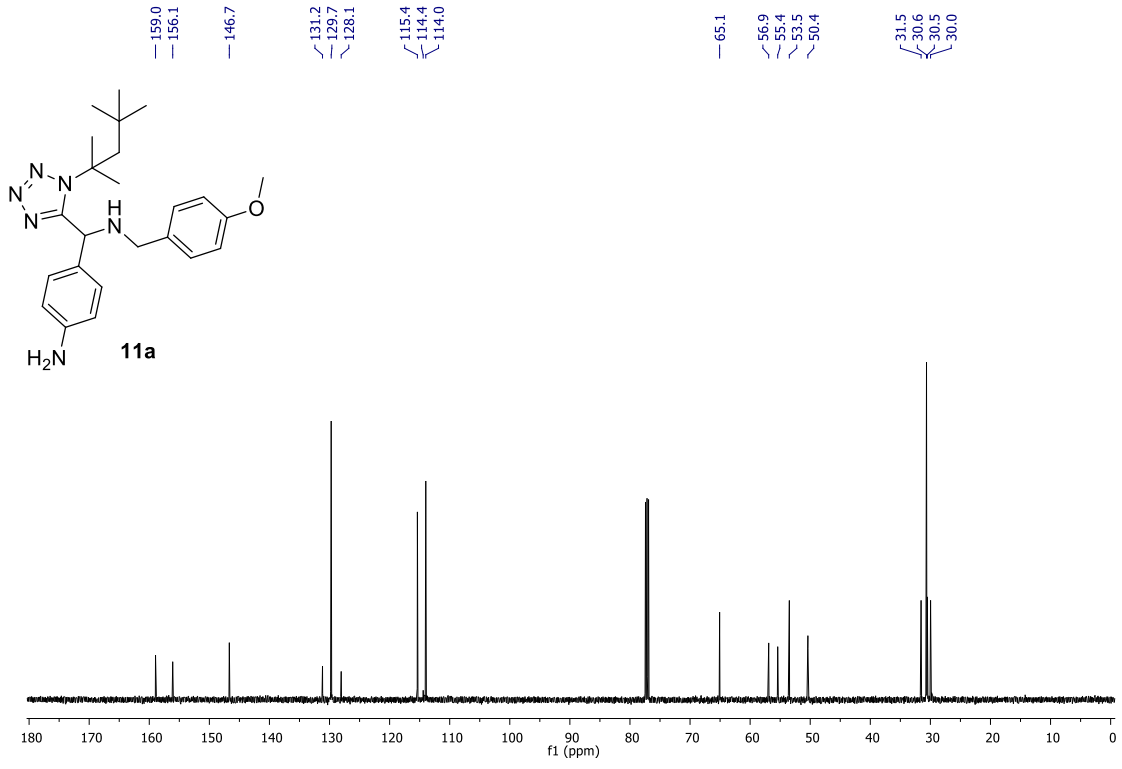


Figure S79. ^{13}C NMR spectrum of 11a.

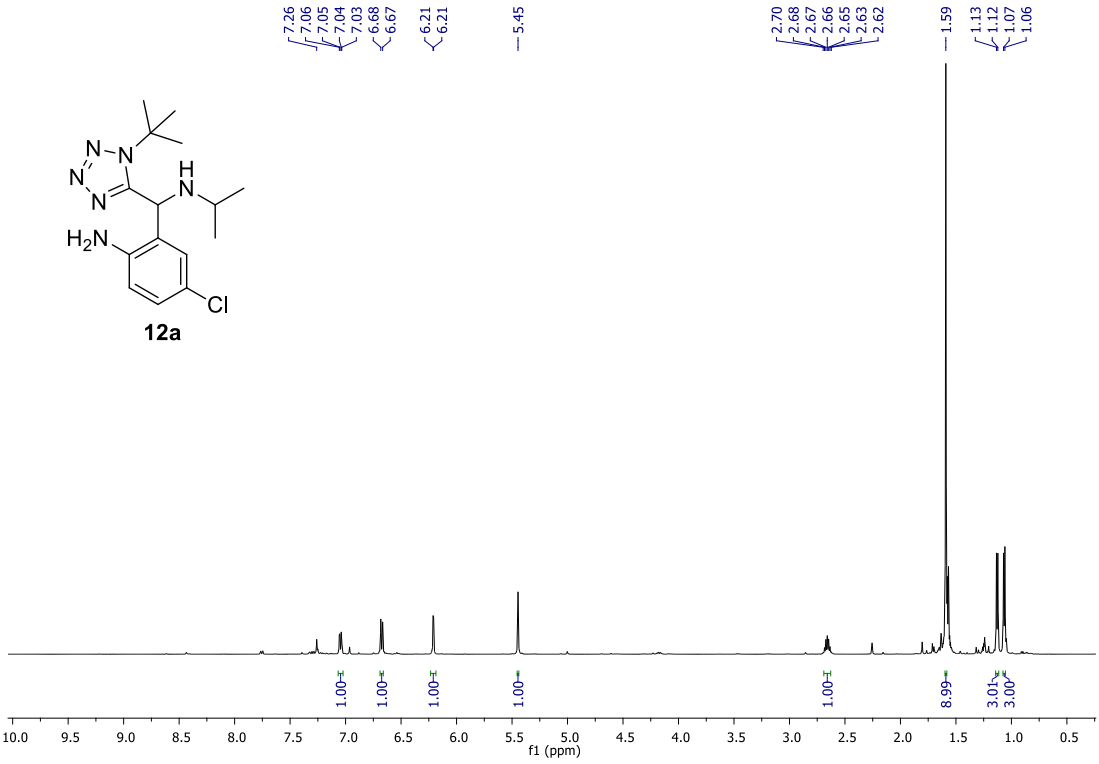


Figure S80. ^{1}H NMR spectrum of 12a.

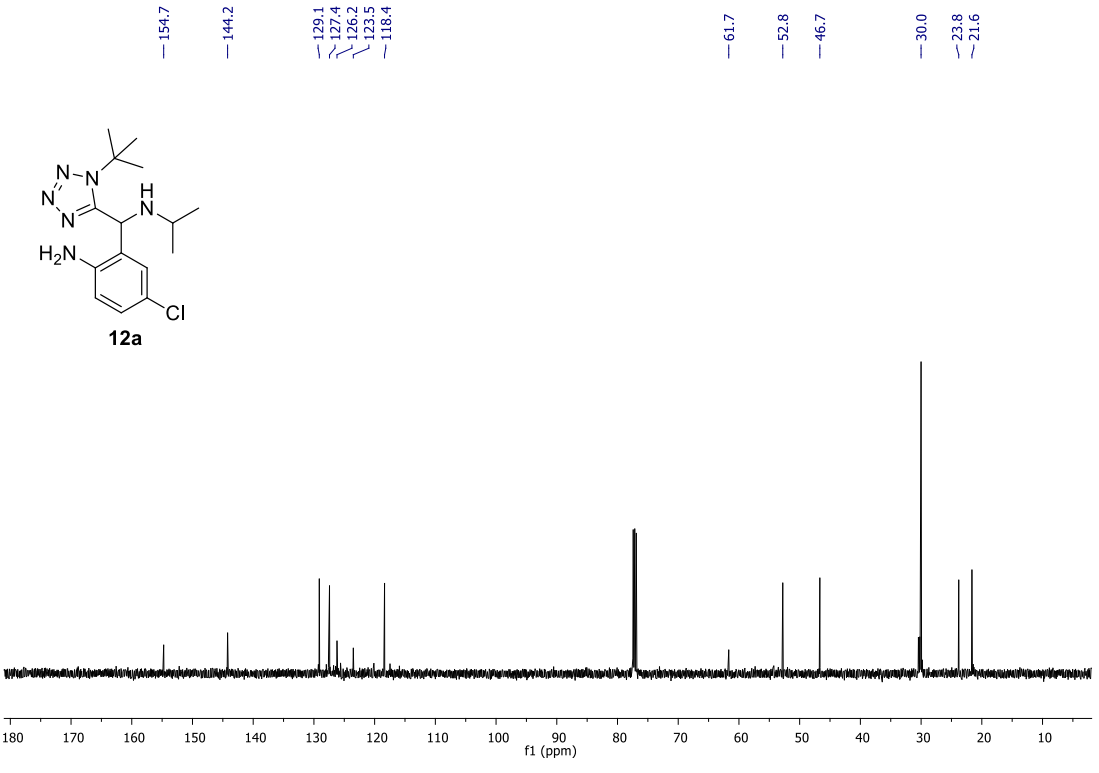


Figure S81. ^{13}C NMR spectrum of 12a.

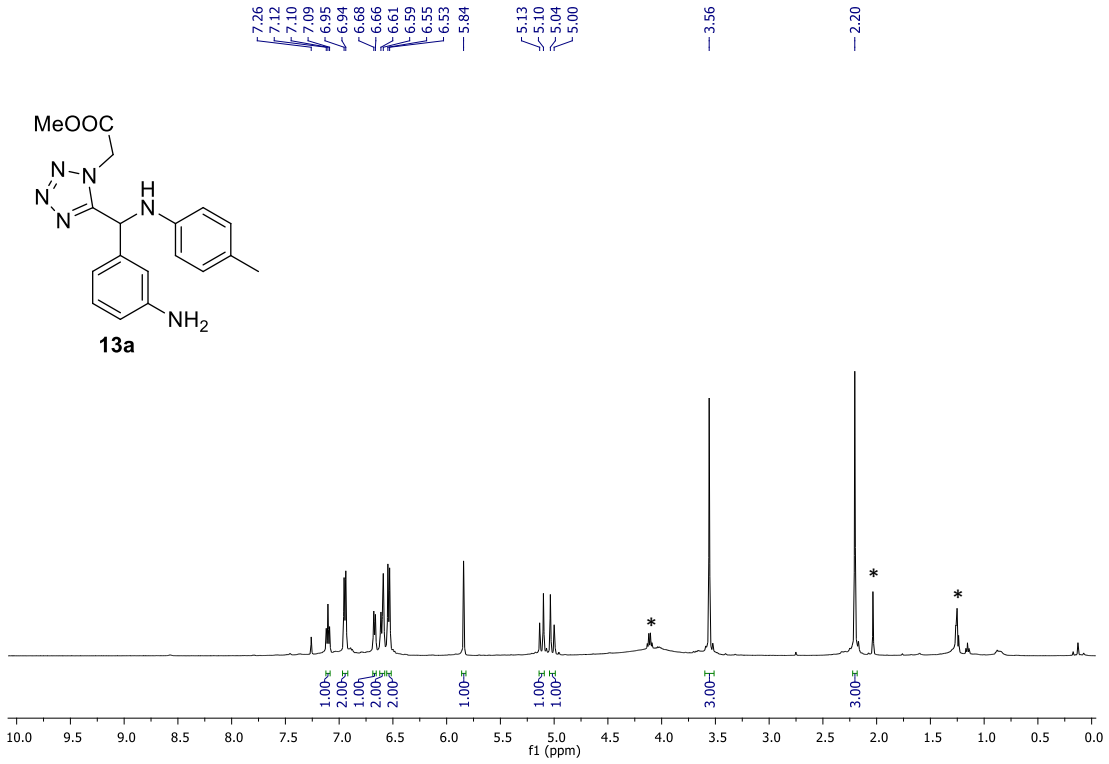


Figure S82. ^{1}H NMR spectrum of 13a.

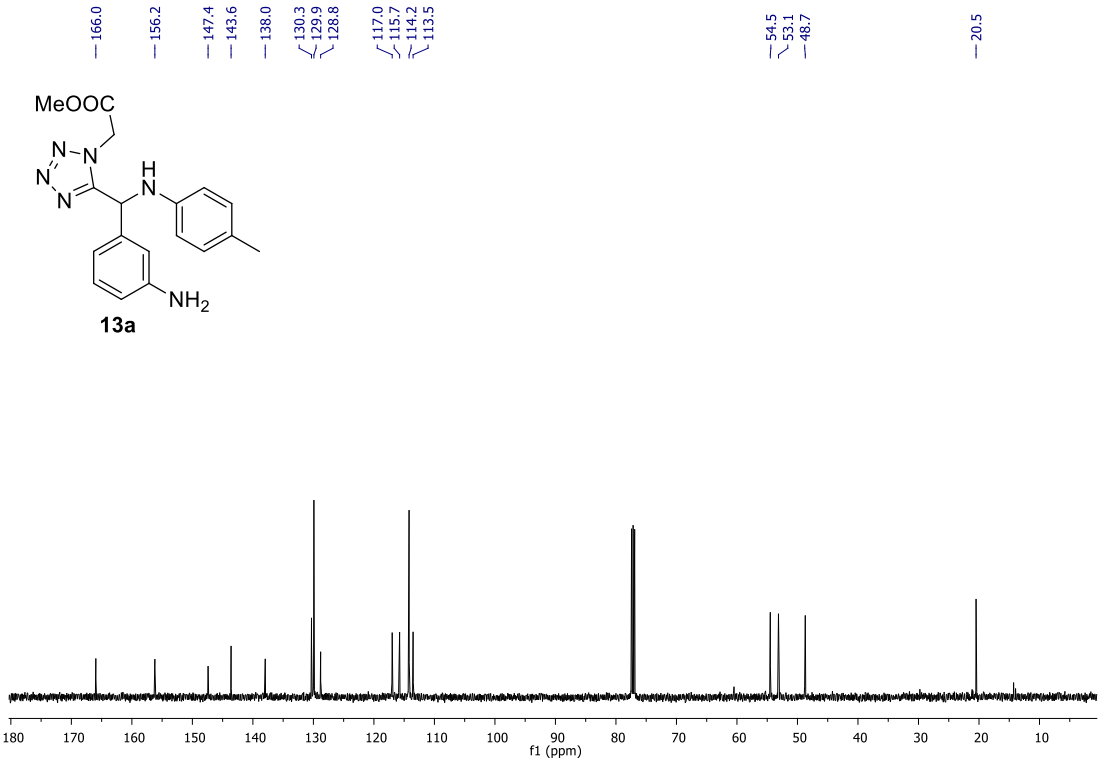


Figure S83. ^{13}C NMR spectrum of 13a.

*Ethyl acetate.

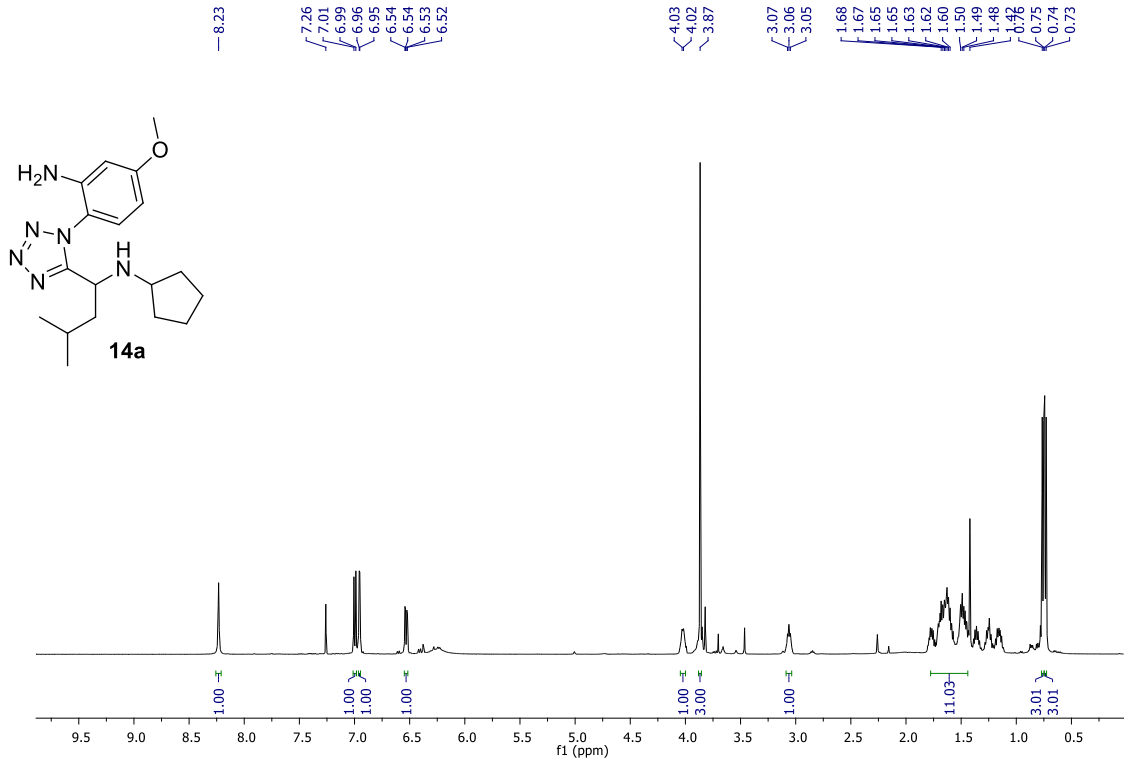


Figure S84. ^{1}H NMR spectrum of 14a.

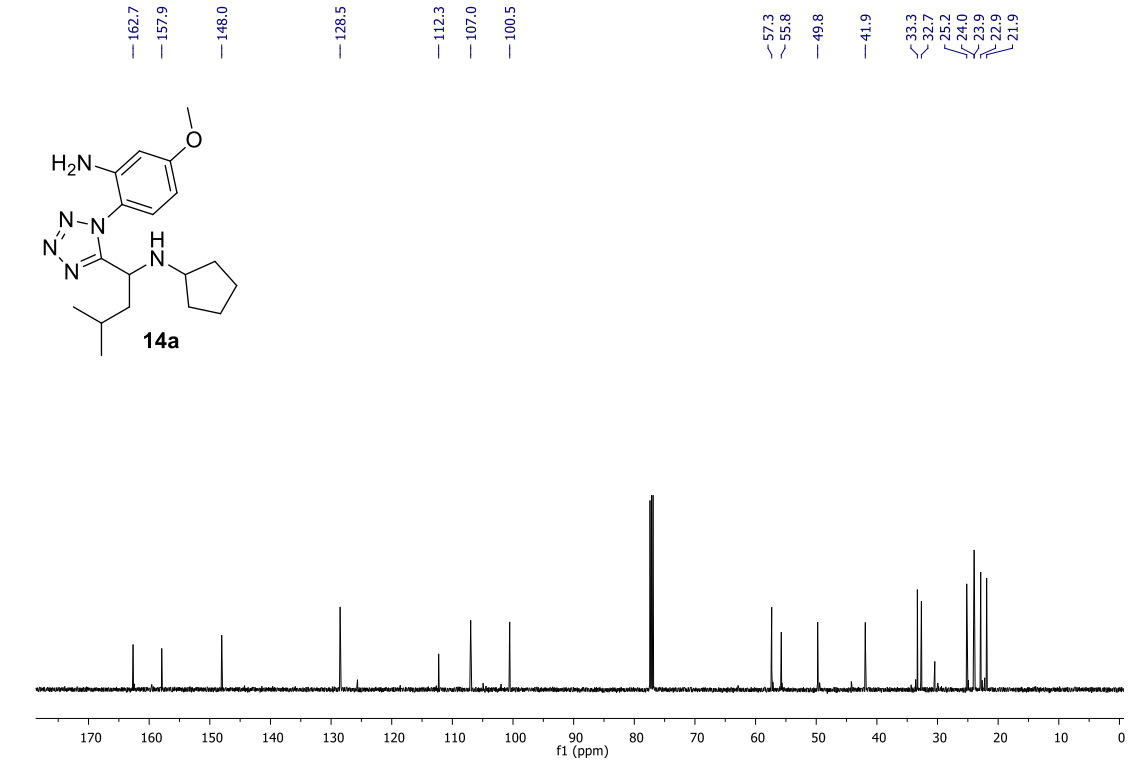


Figure S85. ^{13}C NMR spectrum of 14a.

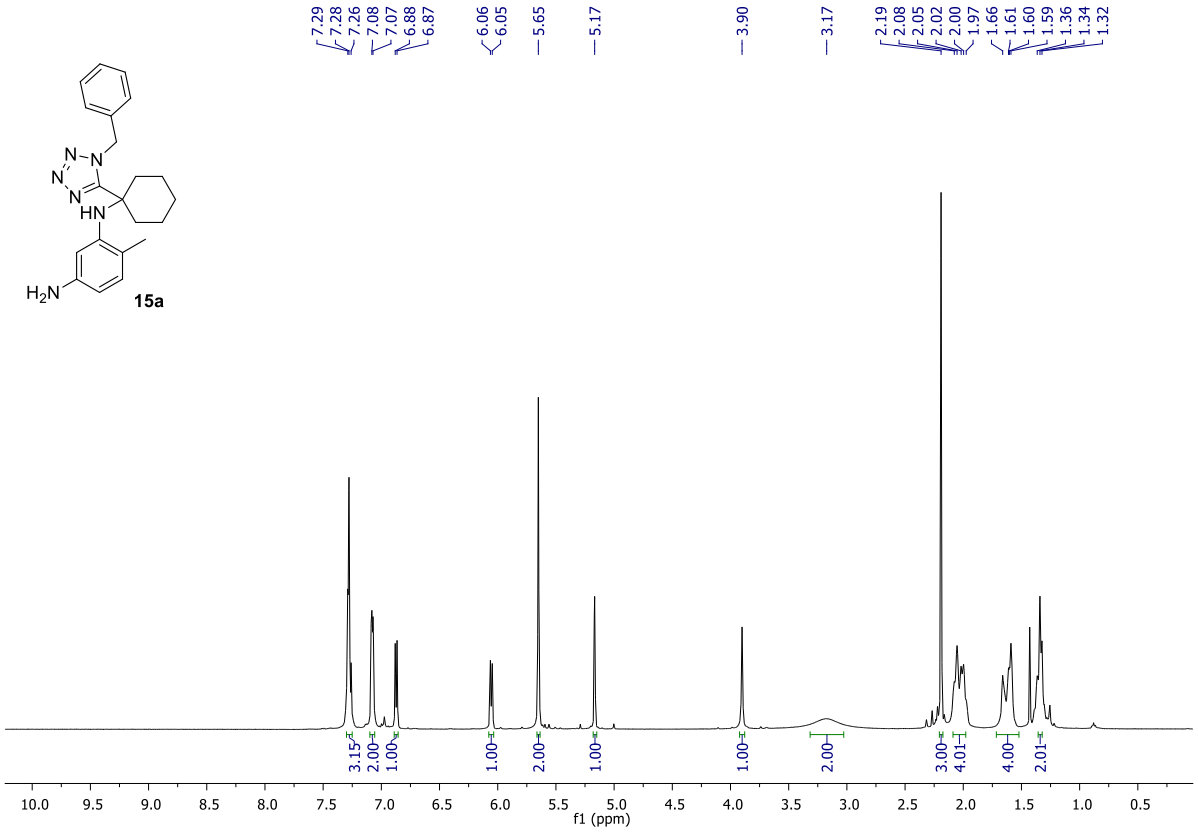


Figure S86. ^{1}H NMR spectrum of 15a.

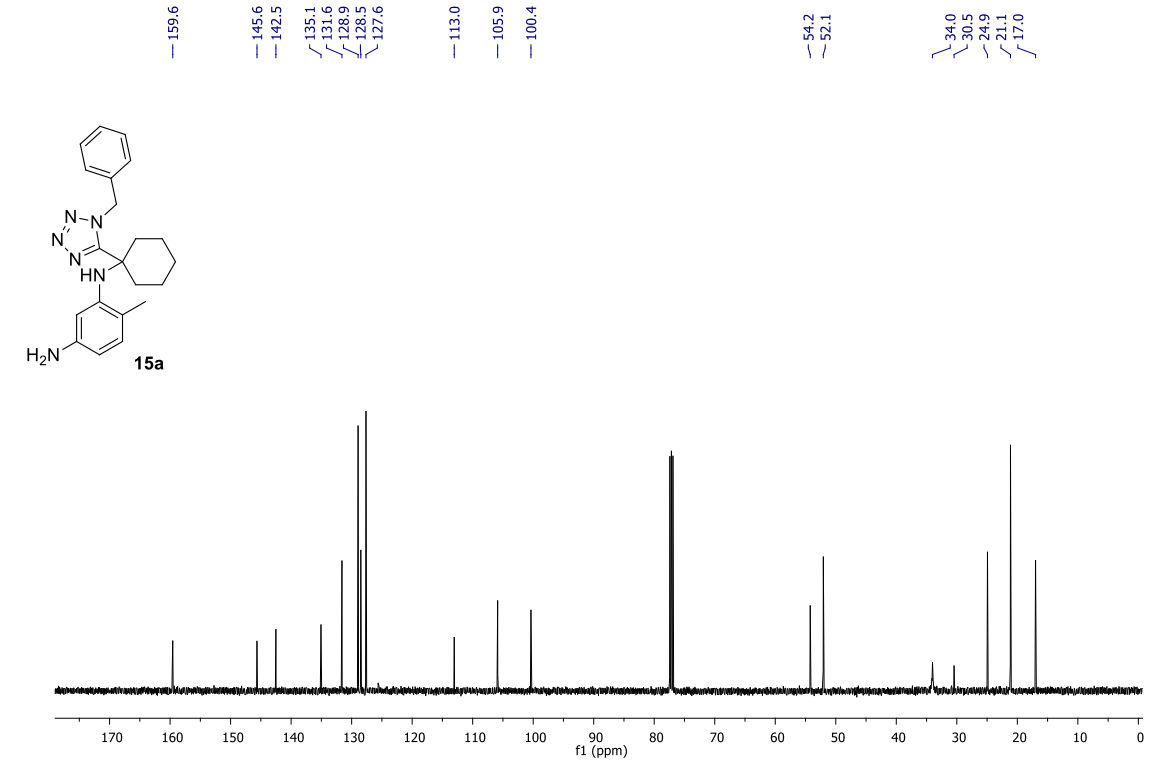


Figure S87. ^{13}C NMR spectrum of 15a.

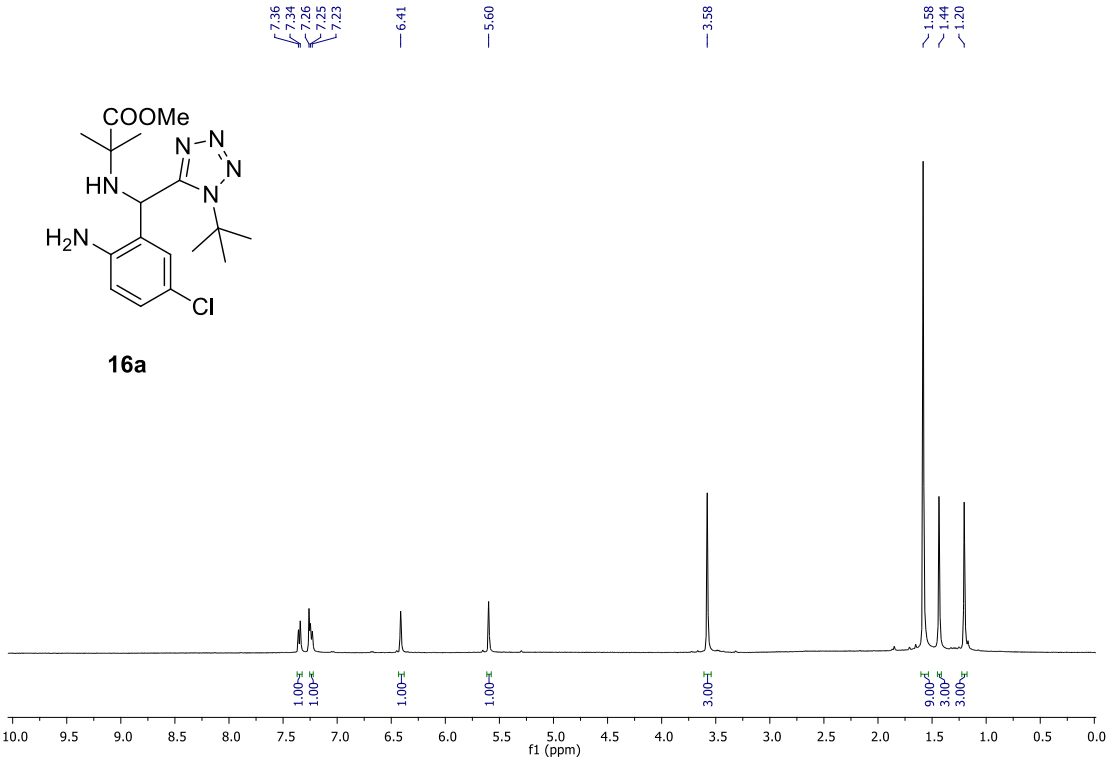


Figure S88. ^{1}H NMR spectrum of 16a.

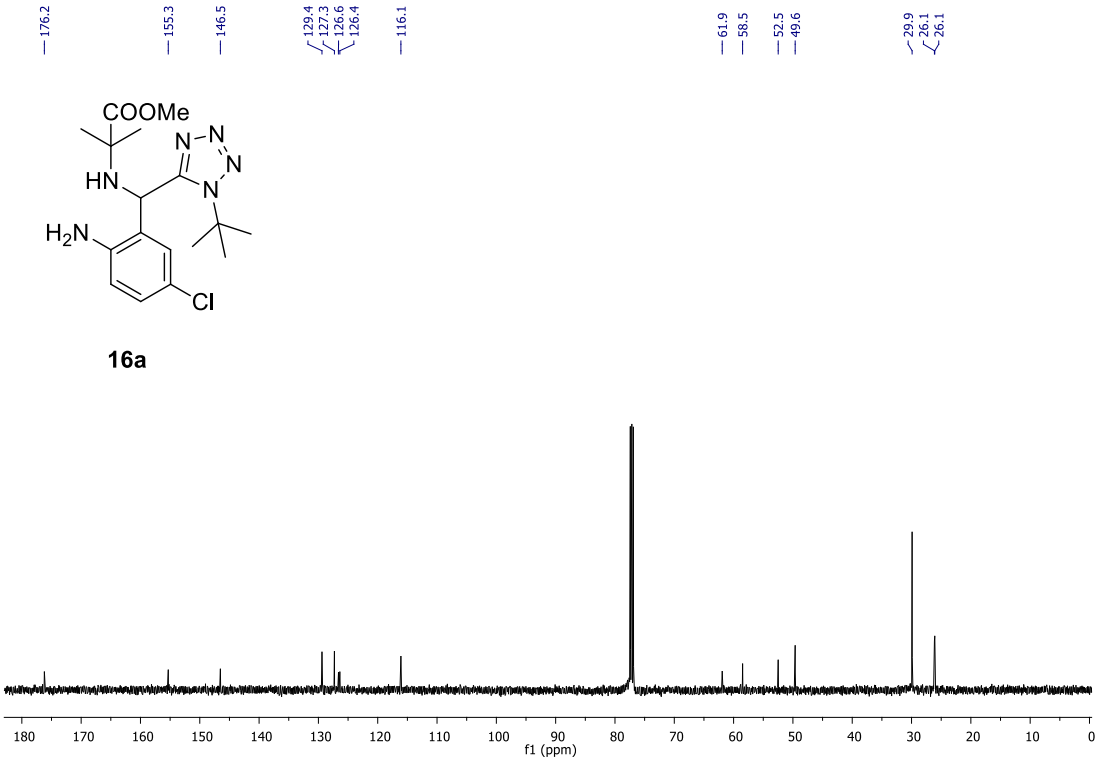


Figure S89. ^{13}C NMR spectrum of 16a.

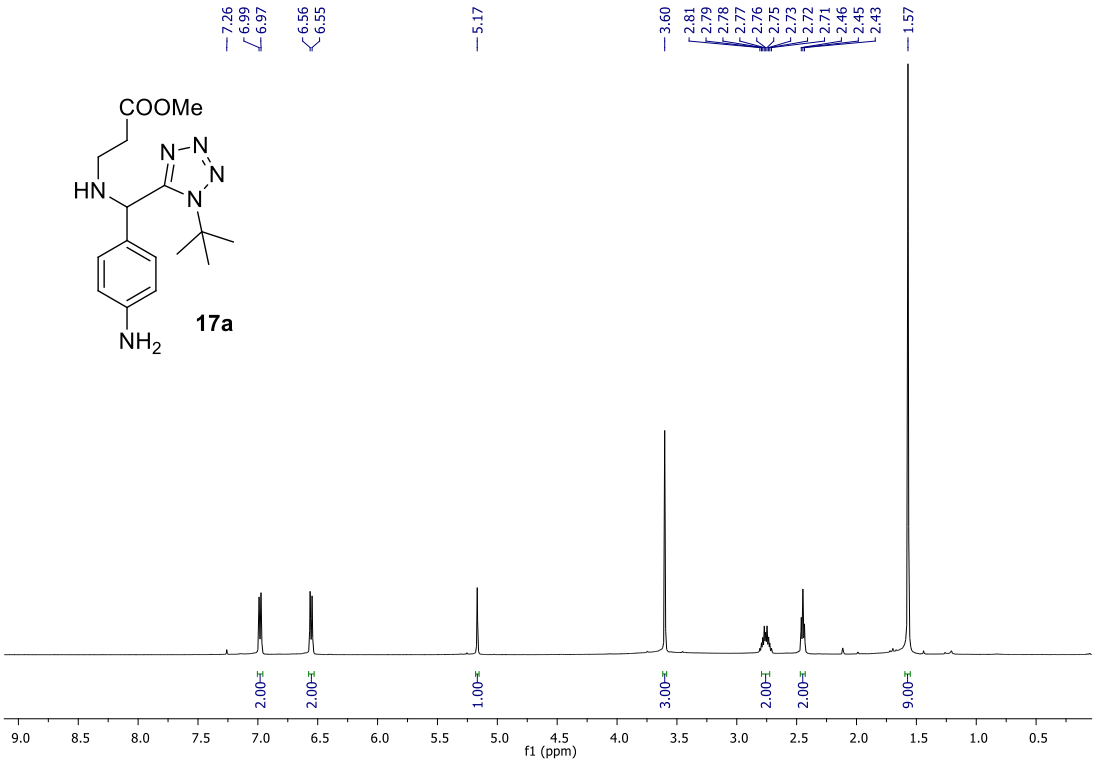


Figure S90. ^{1}H NMR spectrum of 17a.

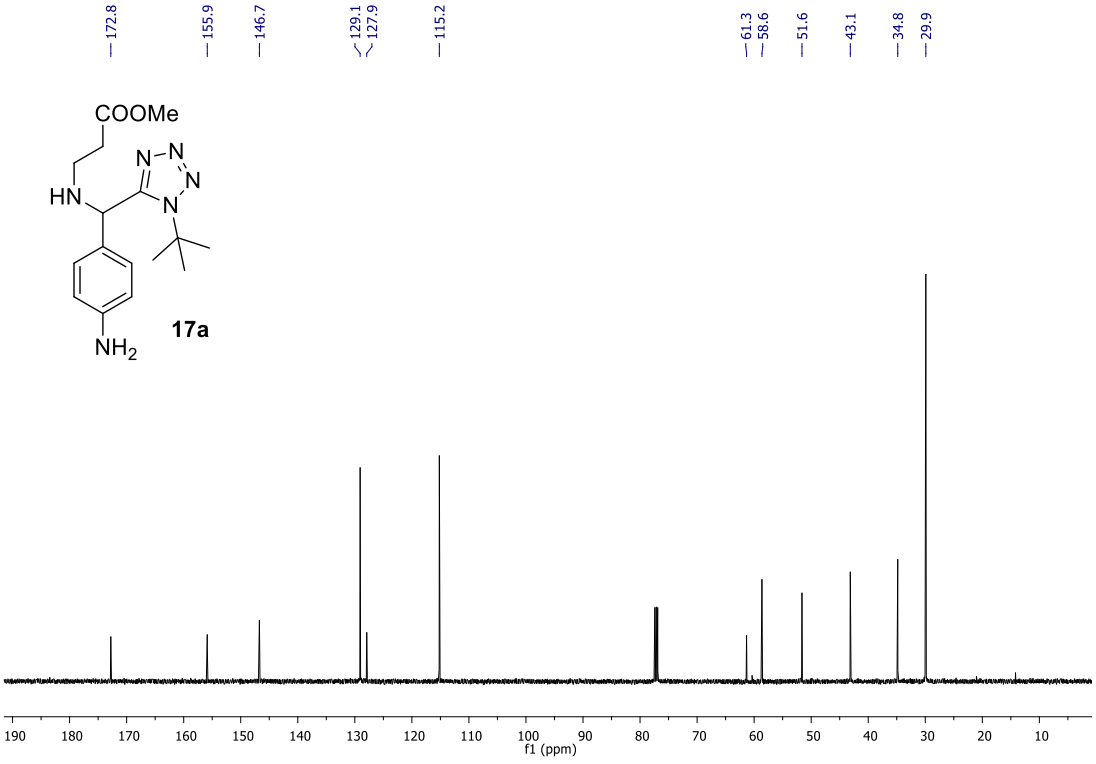


Figure S91. ^{13}C NMR spectrum of 17a.

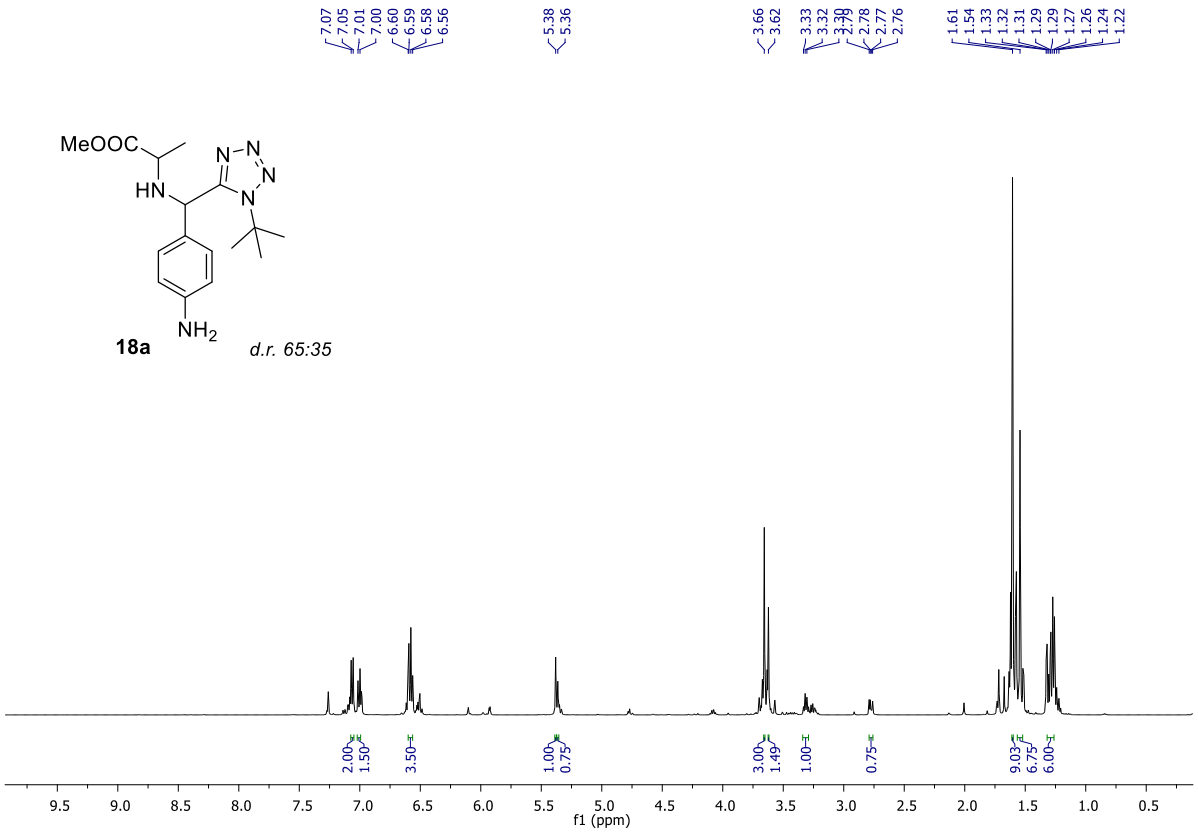


Figure S92. ^{1}H NMR spectrum of 18a.

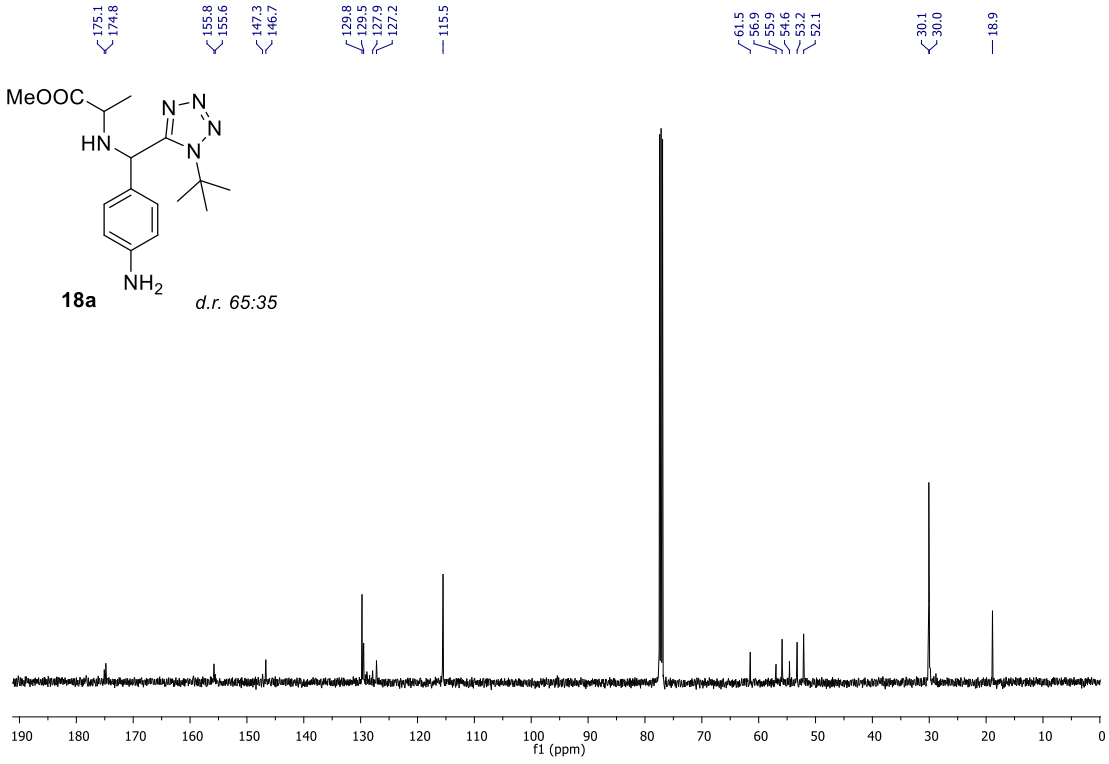


Figure S93. ^{13}C NMR spectrum of 18a.

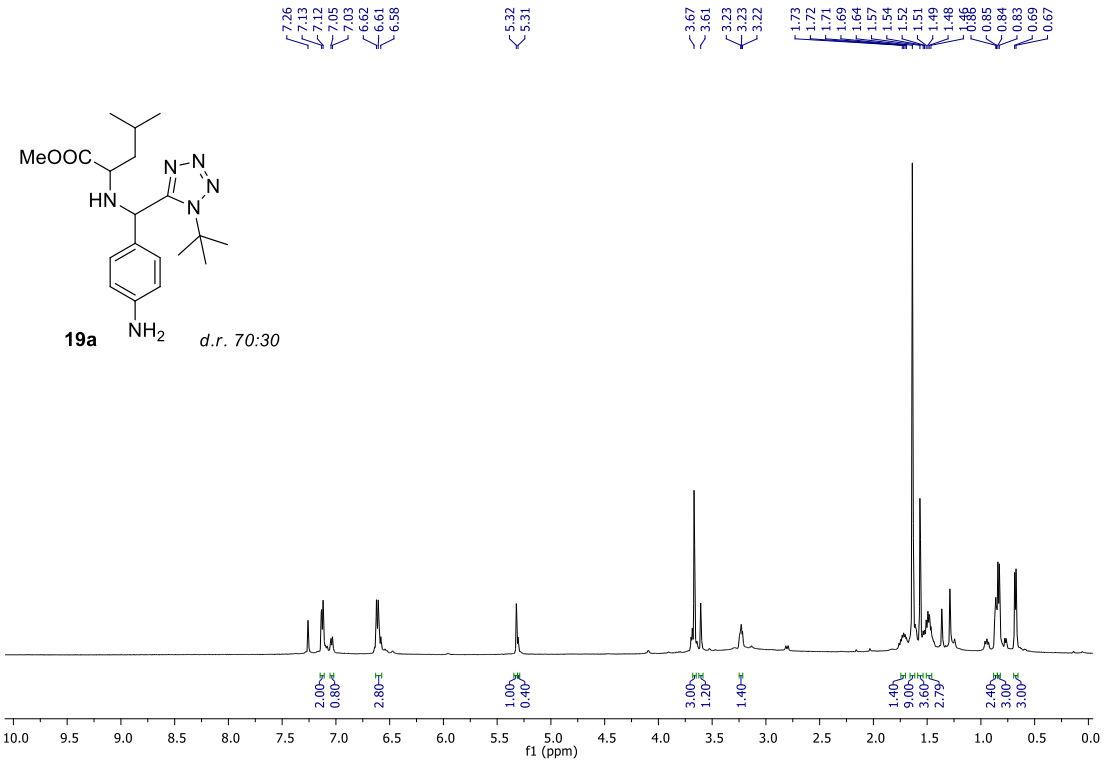


Figure S94. ^{1}H NMR spectrum of 19a.

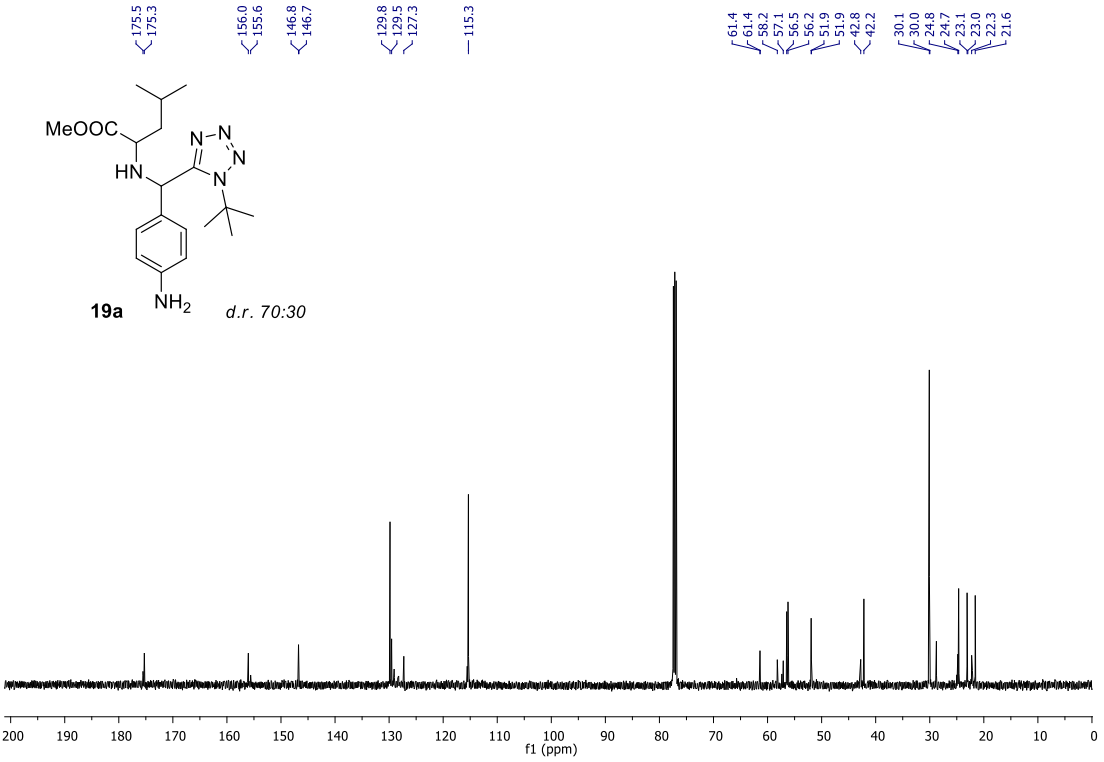


Figure S95. ^{13}C NMR spectrum of 19a.

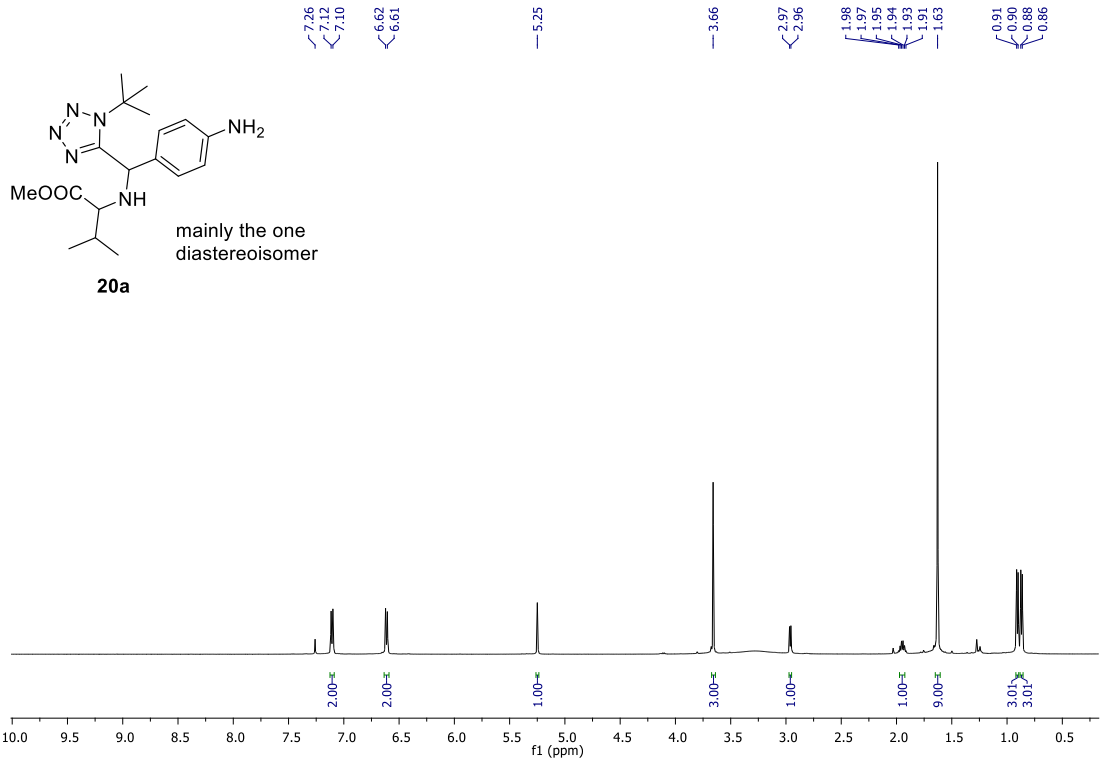


Figure S96. ^{1}H NMR spectrum of 20a.

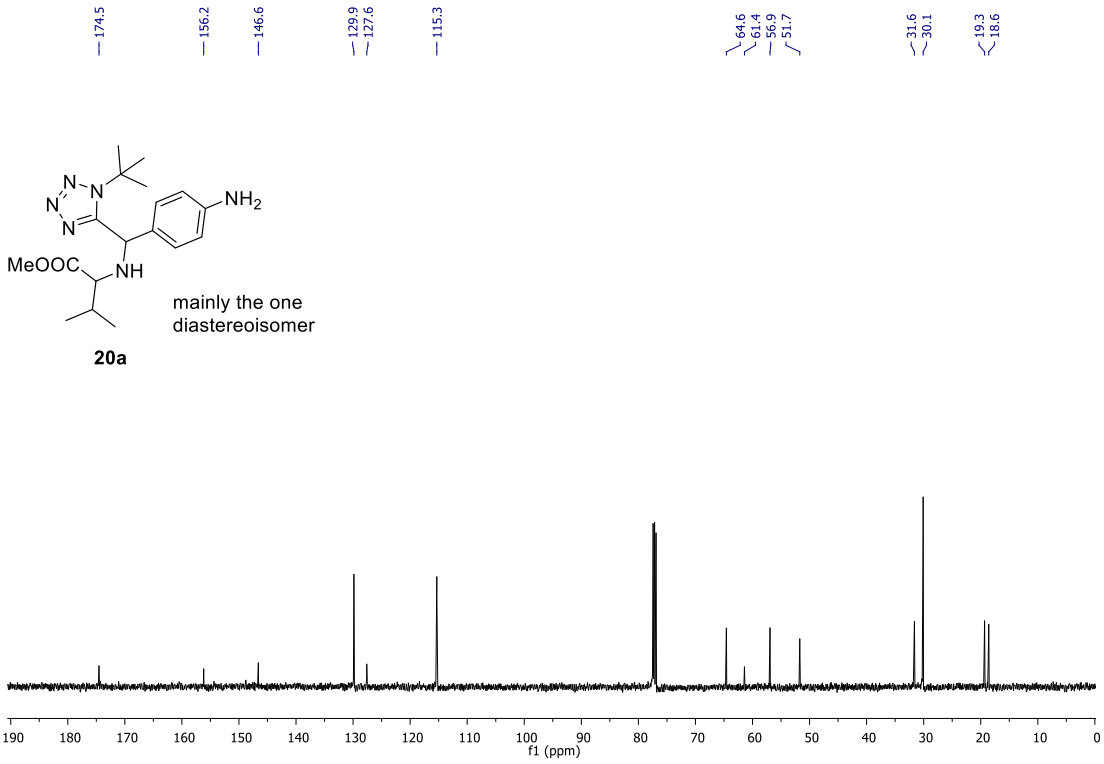


Figure S97. ^{13}C NMR spectrum of 20a.

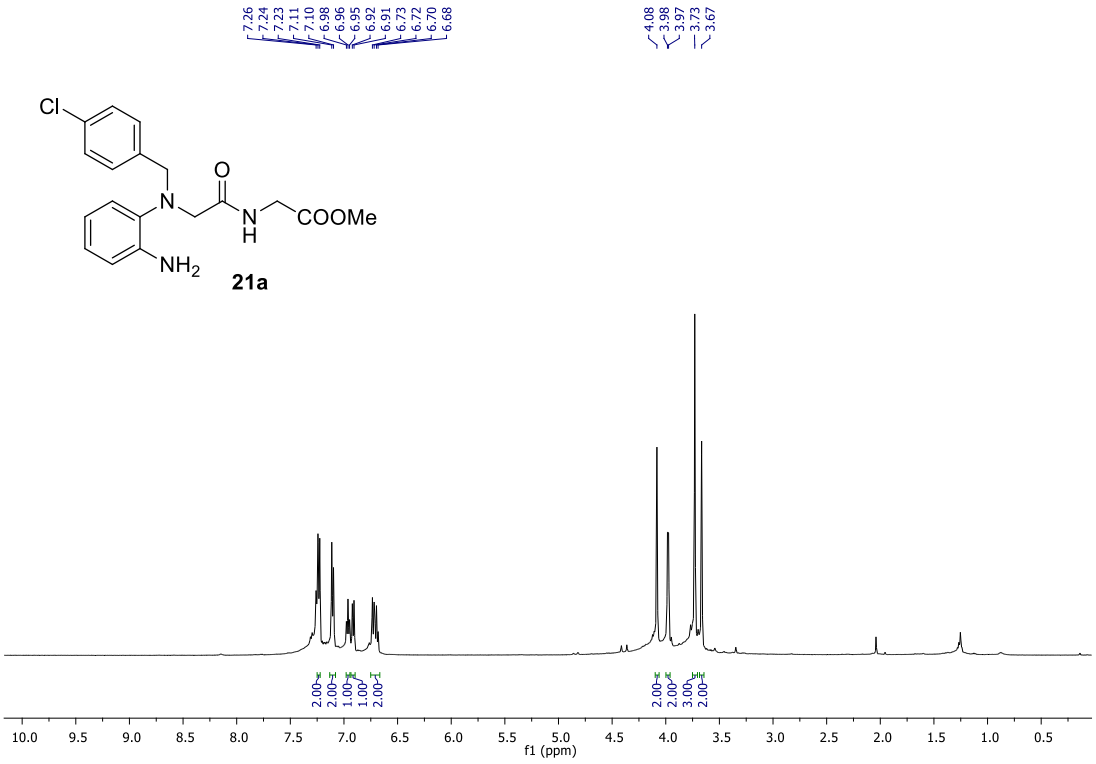


Figure S98. ^{1}H NMR spectrum of 21a.

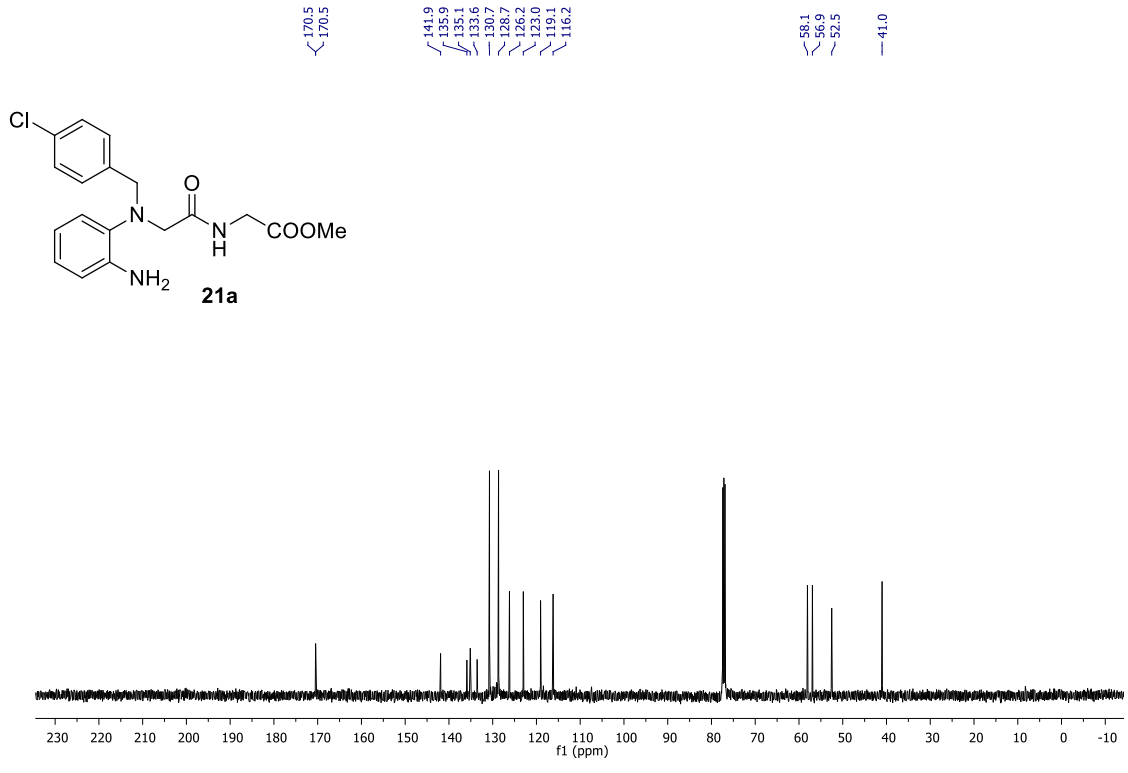


Figure S99. ^{13}C NMR spectrum of 21a.

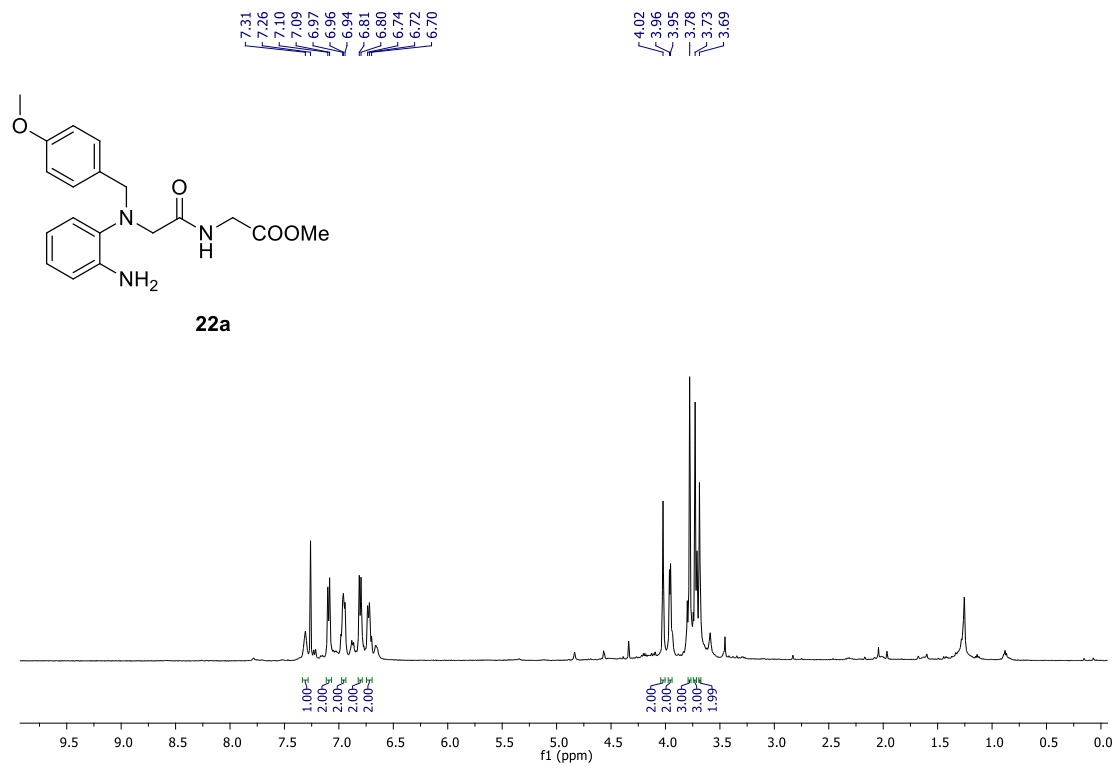


Figure S100. ^{1}H NMR spectrum of 22a.

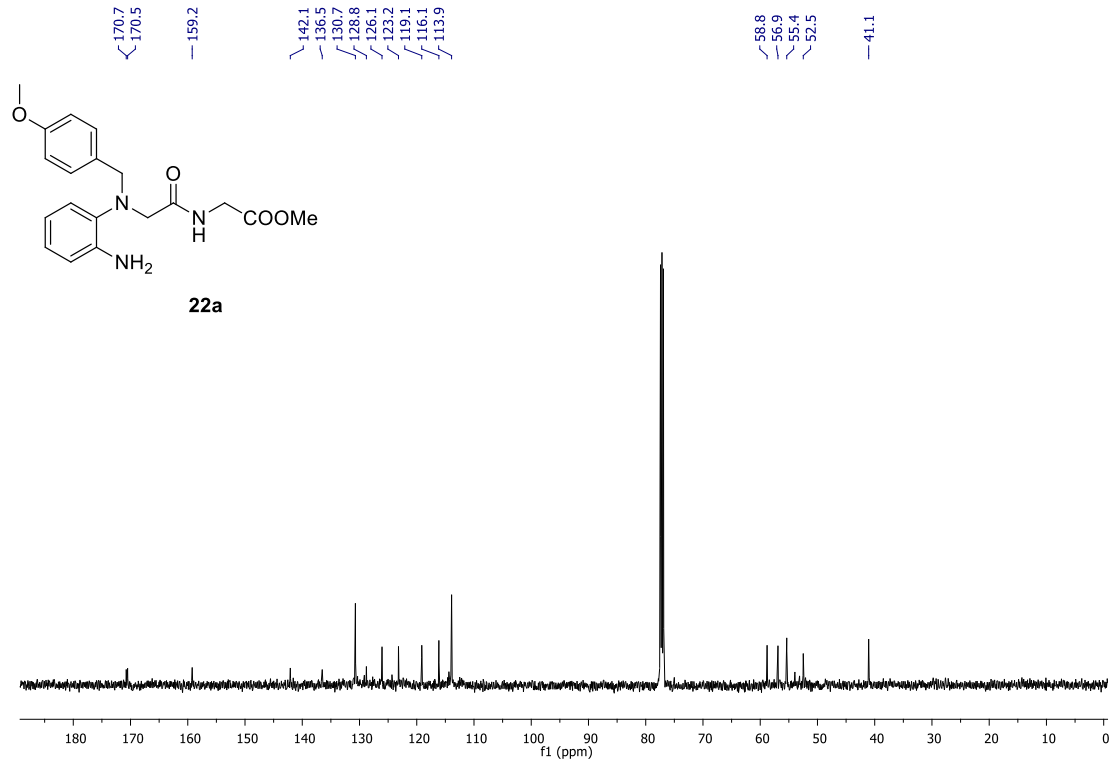


Figure S101. ^{13}C NMR spectrum of 22a.

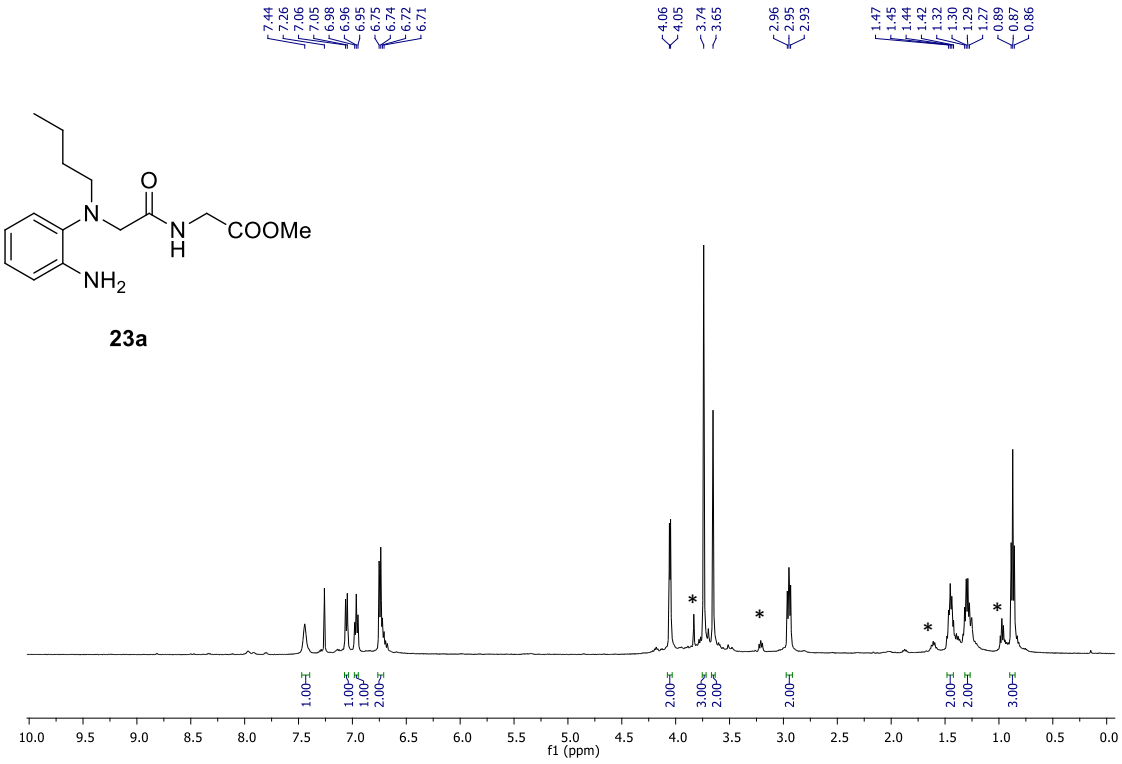


Figure S102. ^{1}H NMR spectrum of 23a.

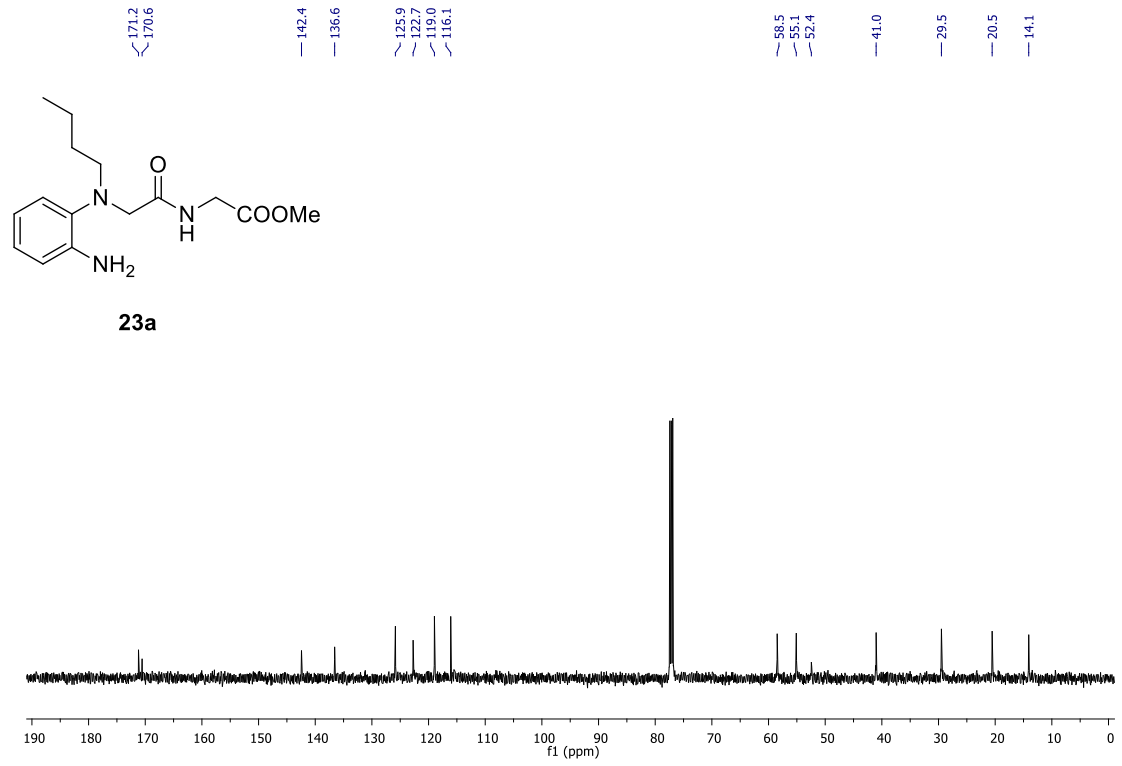


Figure S103. ^{13}C NMR spectrum of 23a.

*: Small amount of the corresponding hydroquinoxalin-2(1*H*)-one derivative that is formed in situ.

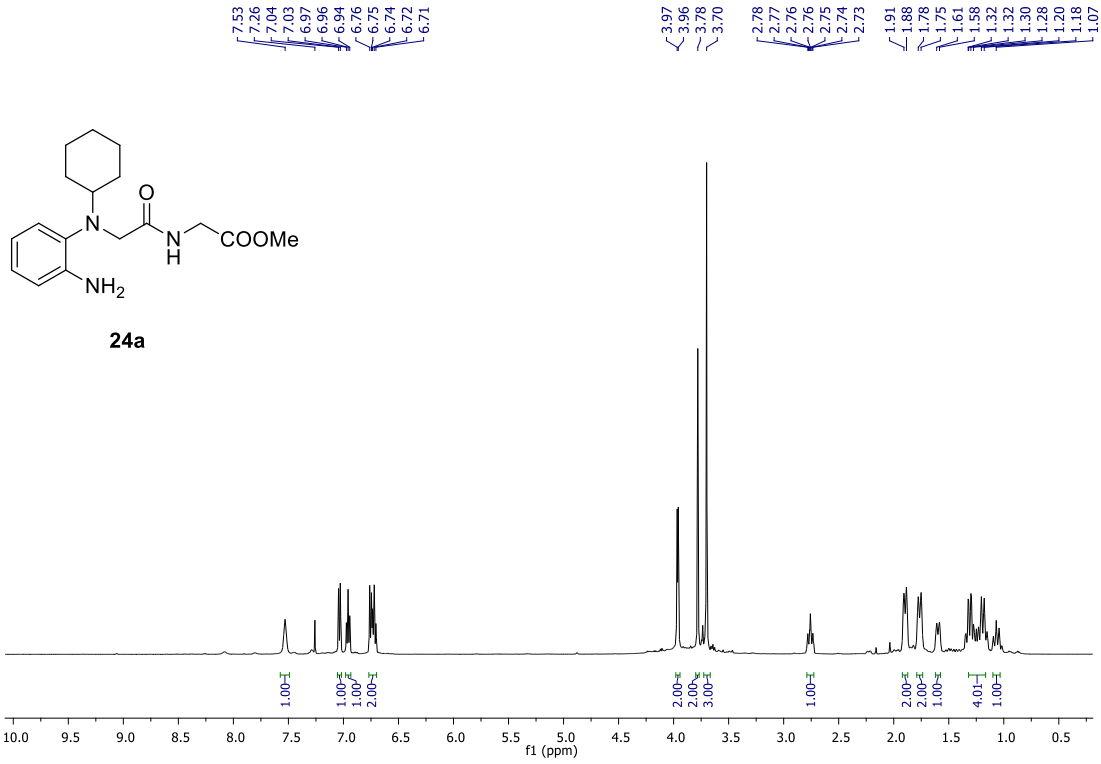


Figure S104. ^{1}H NMR spectrum of 24a.

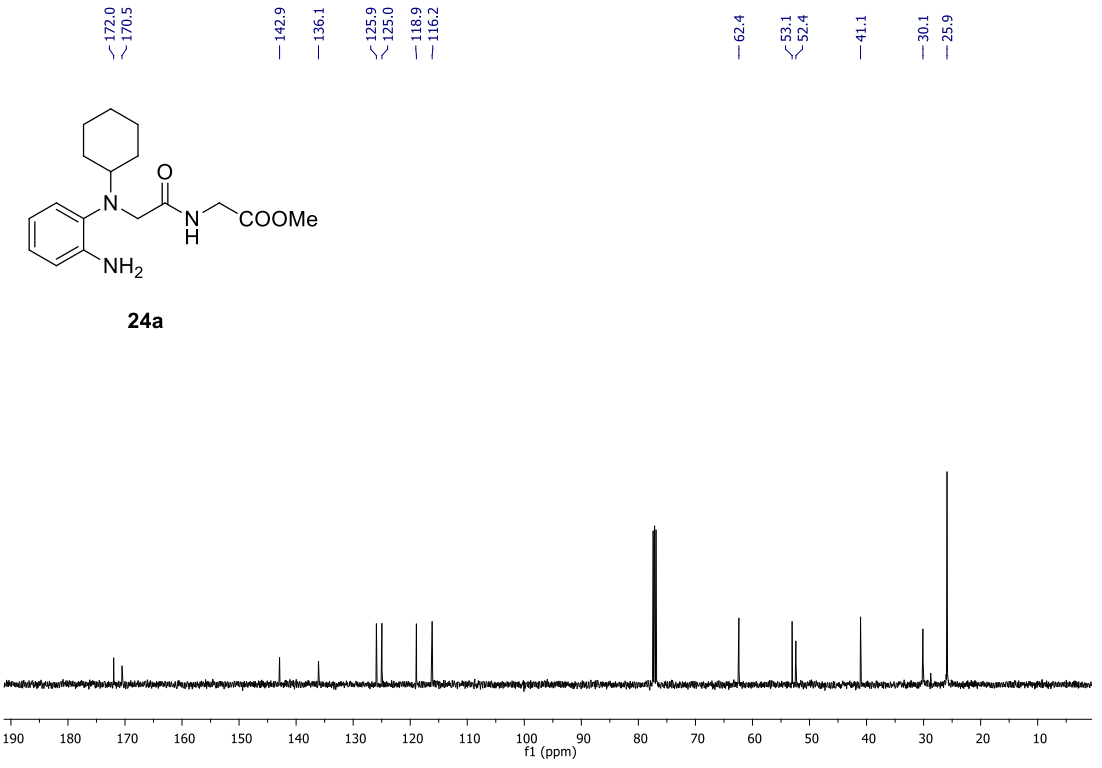


Figure S105. ^{13}C NMR spectrum of 24a.

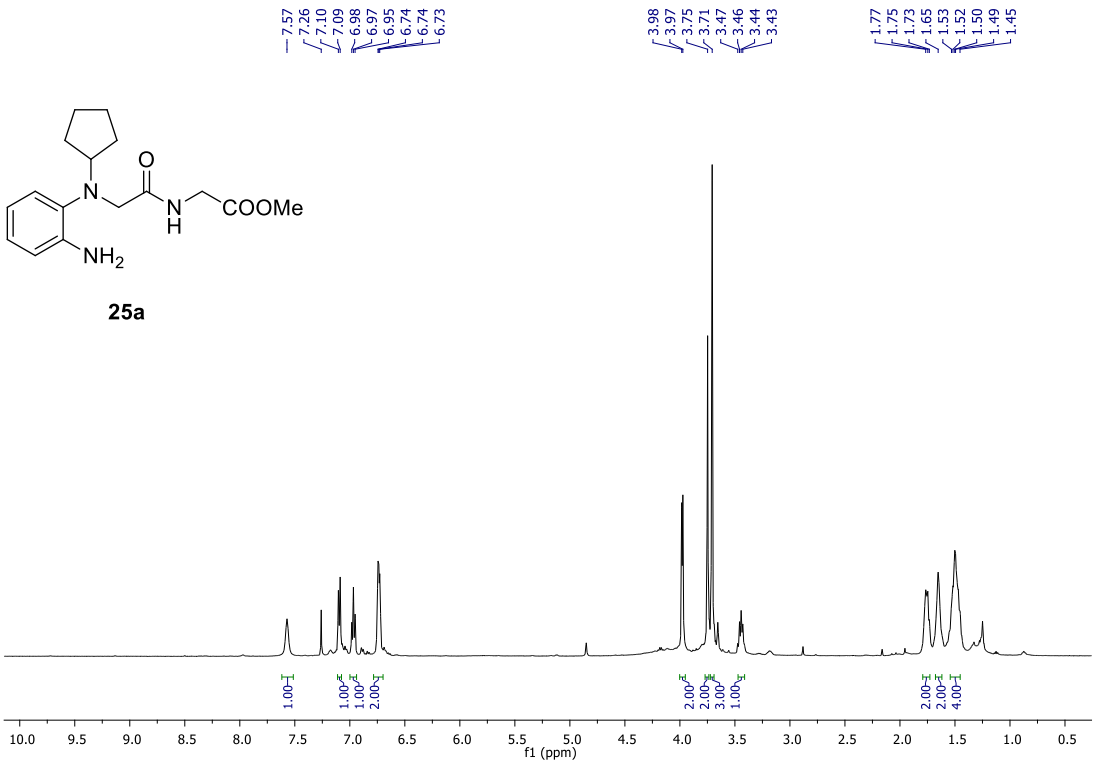


Figure S106. ^{1}H NMR spectrum of 25a.

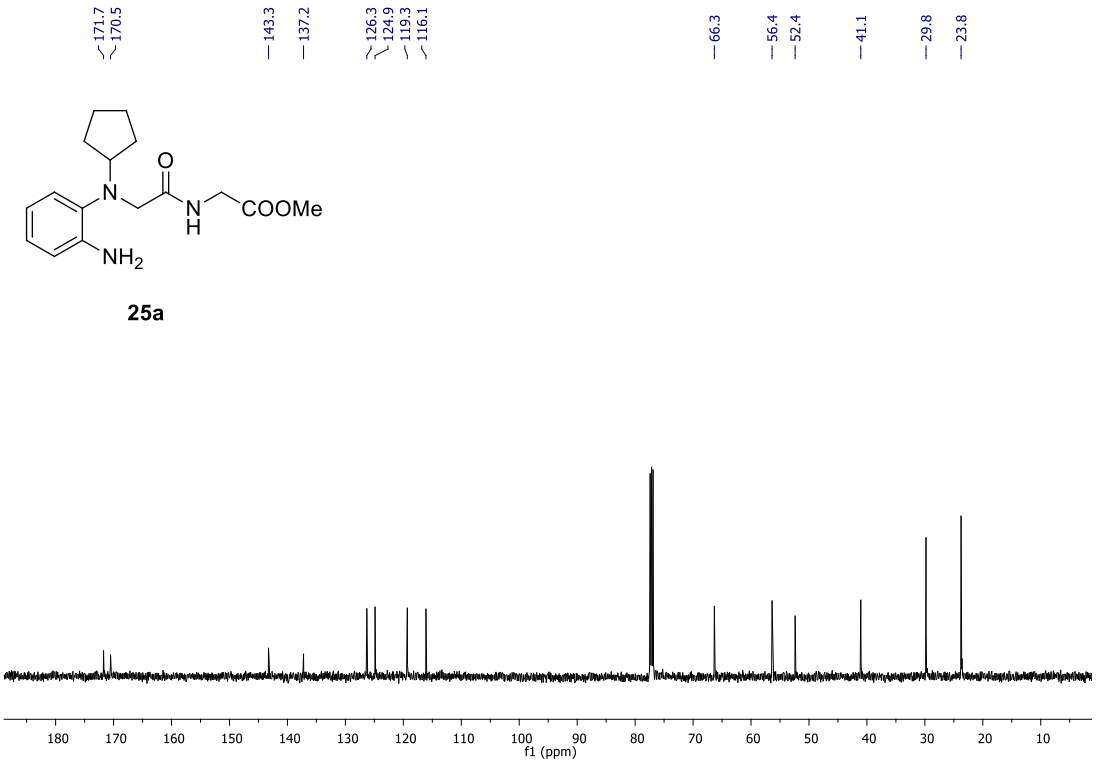


Figure S107. ^{13}C NMR spectrum of 25a.

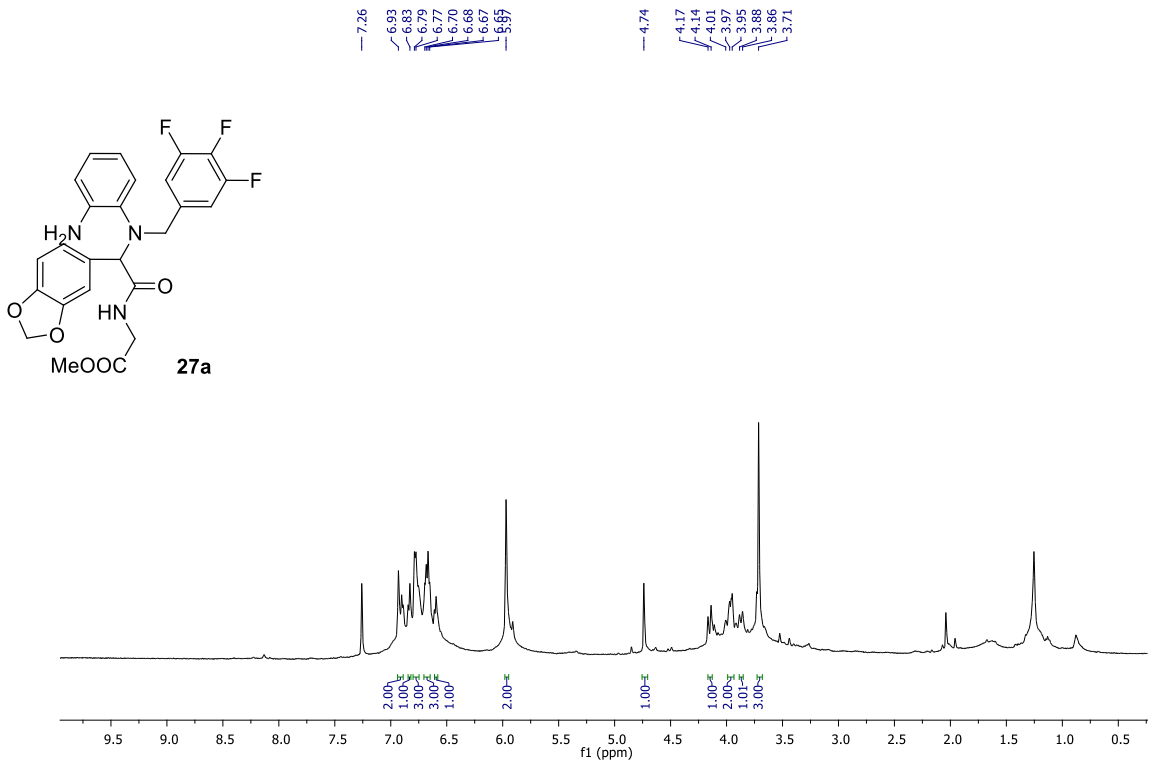


Figure S108. ^{1}H NMR spectrum of 27a.

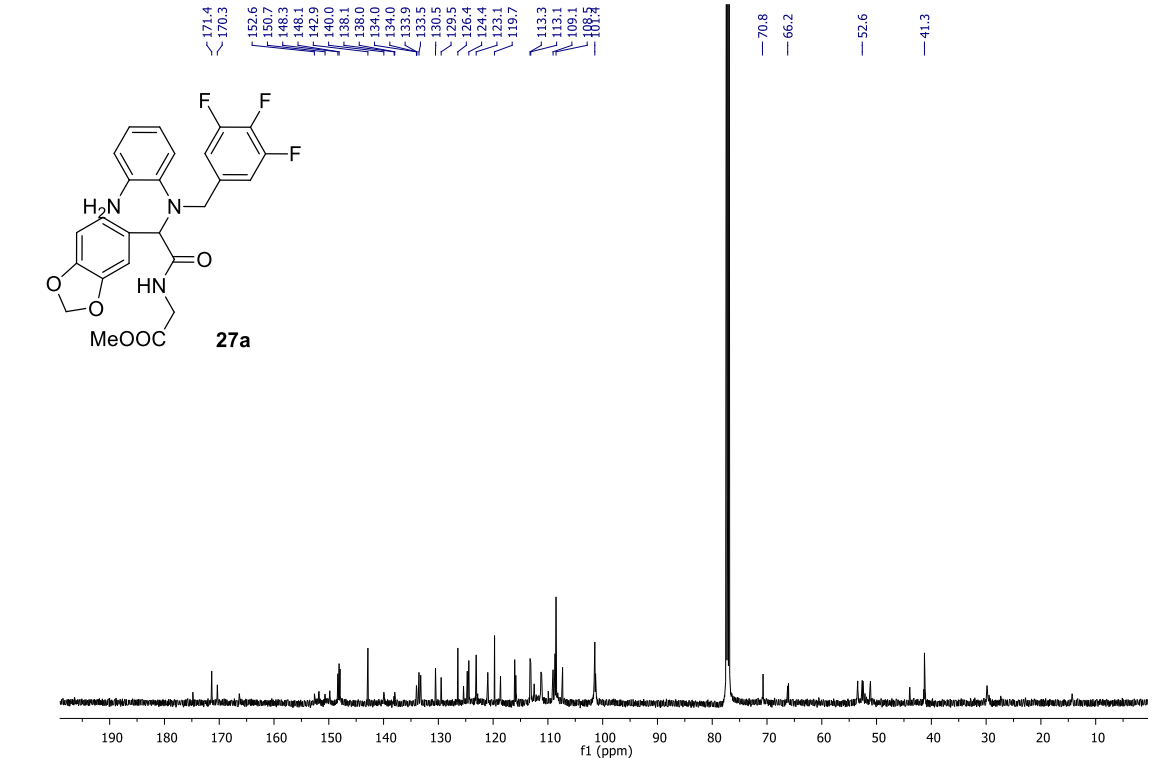


Figure S109. ^{13}C NMR spectrum of 27a.

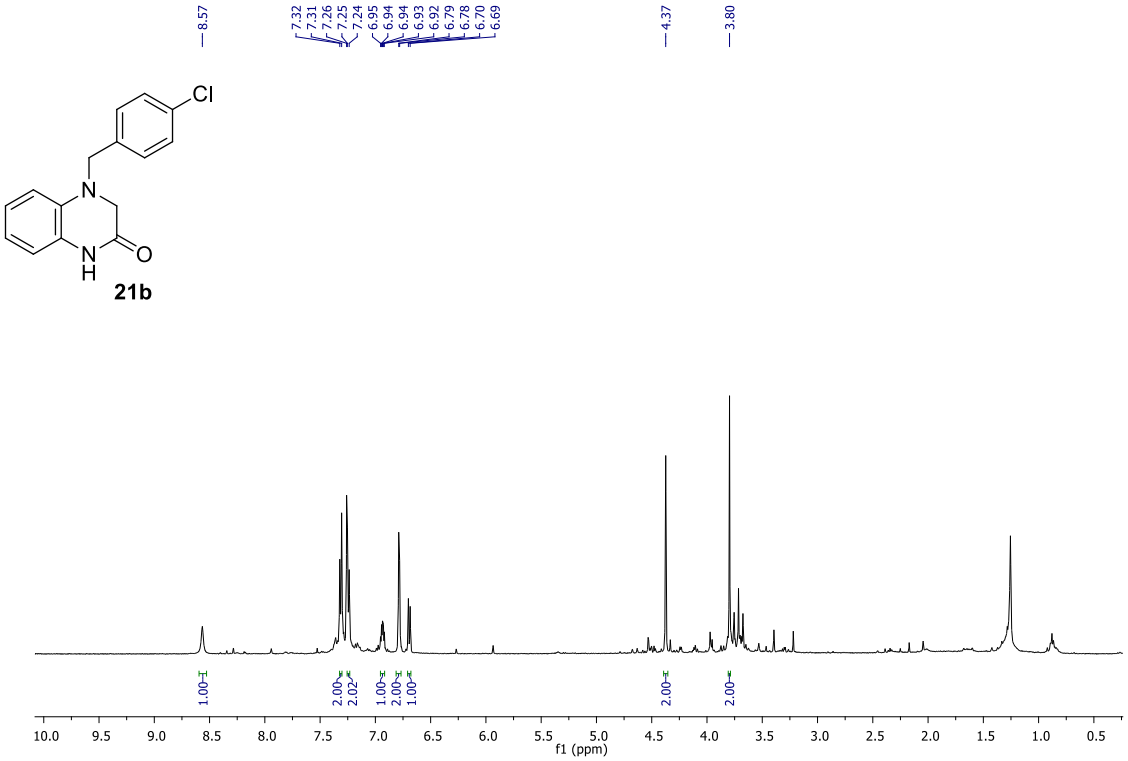


Figure S110. ^{1}H NMR spectrum of 21b.

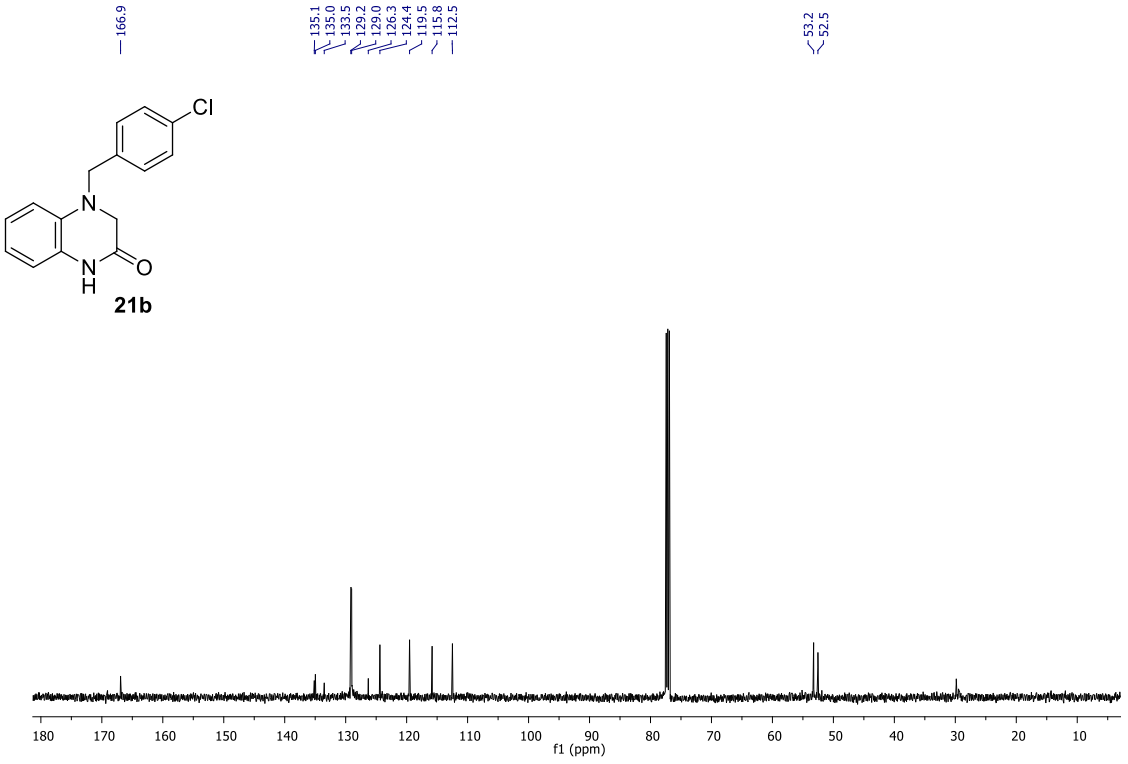


Figure S111. ^{13}C NMR spectrum of 21b.

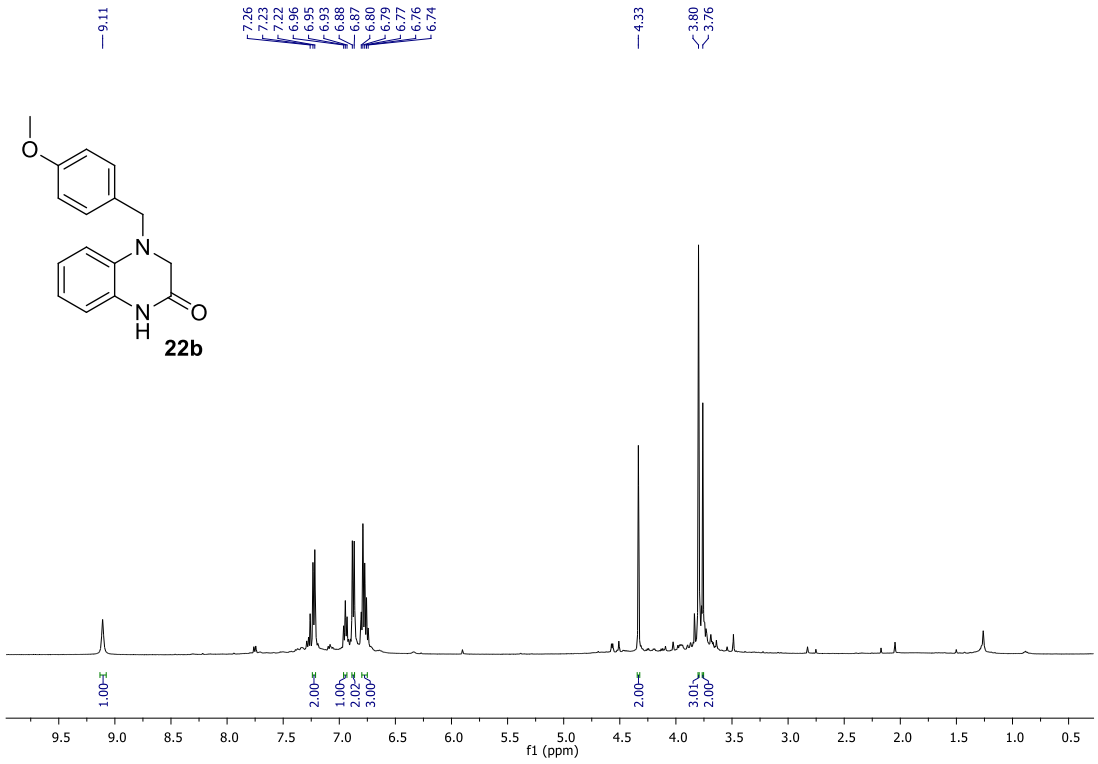


Figure S112. ^{1}H NMR spectrum of 22b.

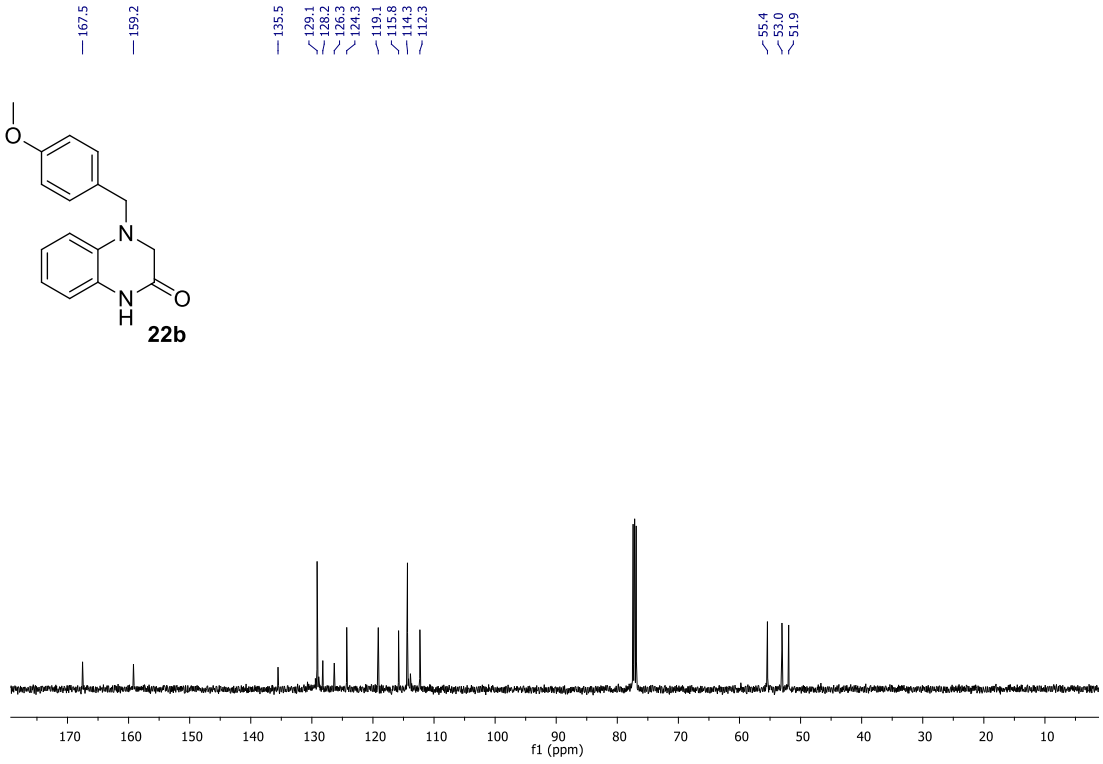


Figure S113. ^{13}C NMR spectrum of 22b.

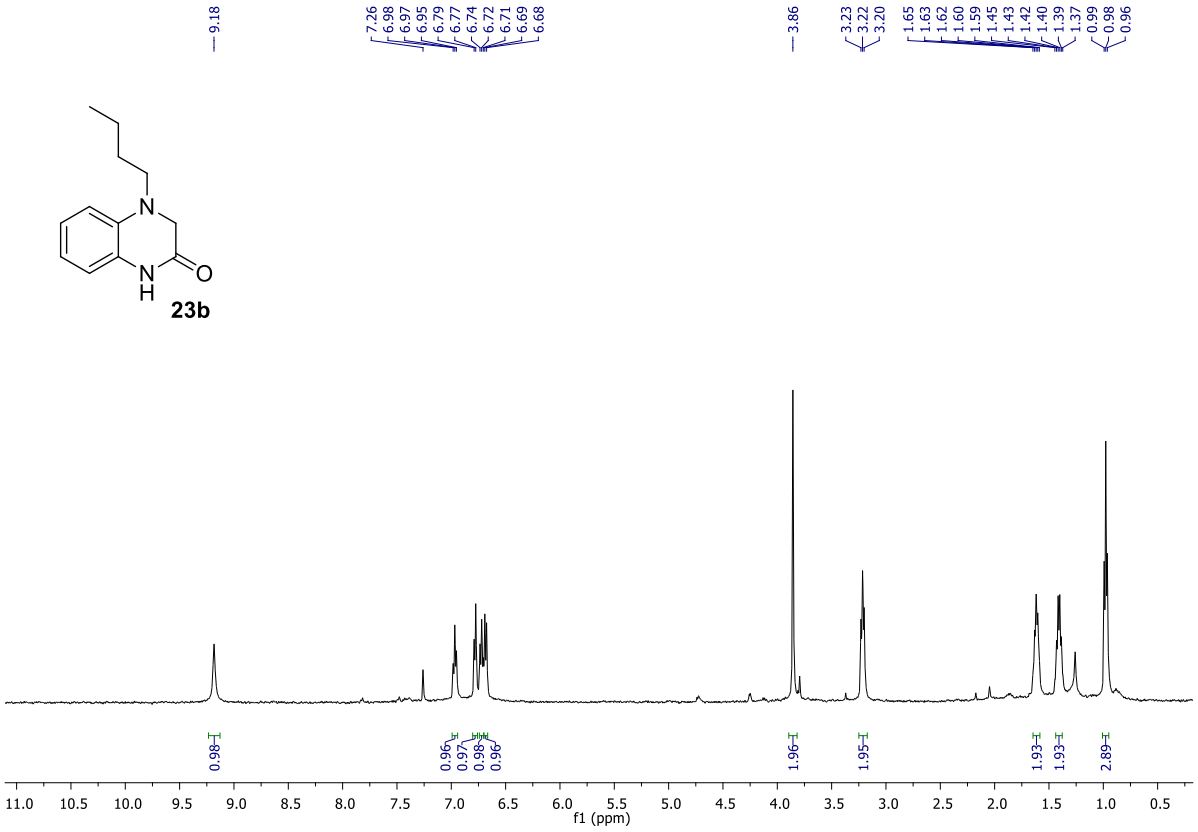


Figure S114. ^{1}H NMR spectrum of 23b.

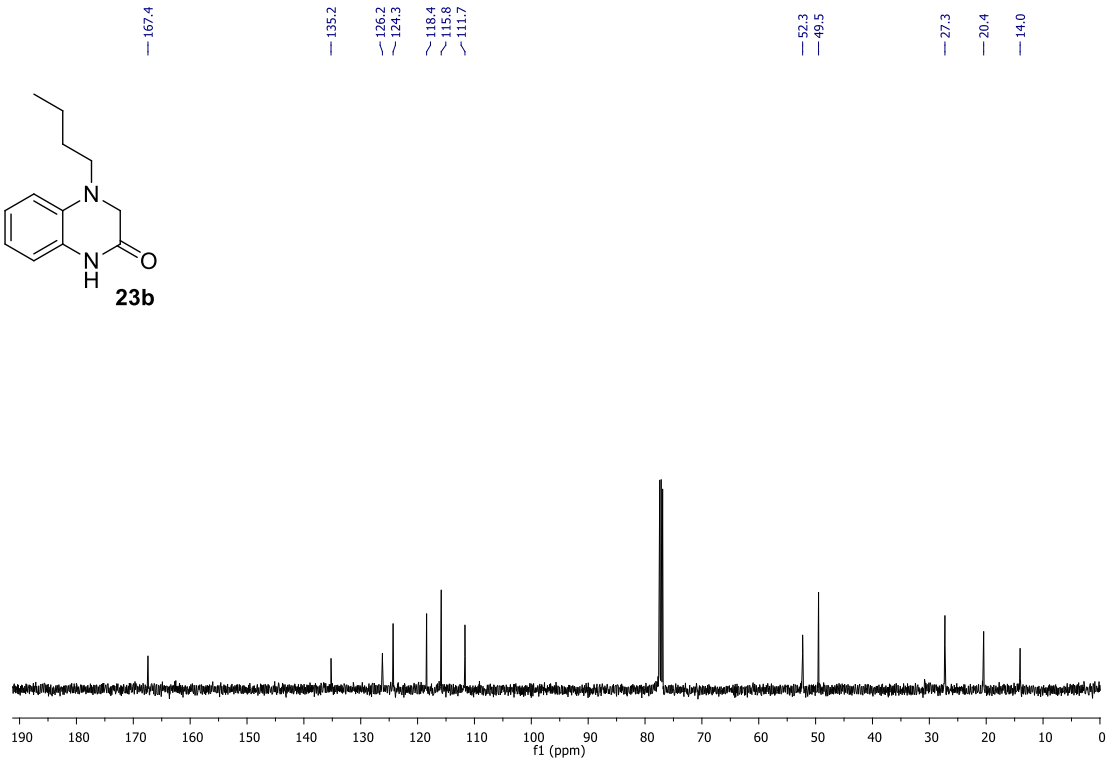


Figure S115. ^{13}C NMR spectrum of 23b.

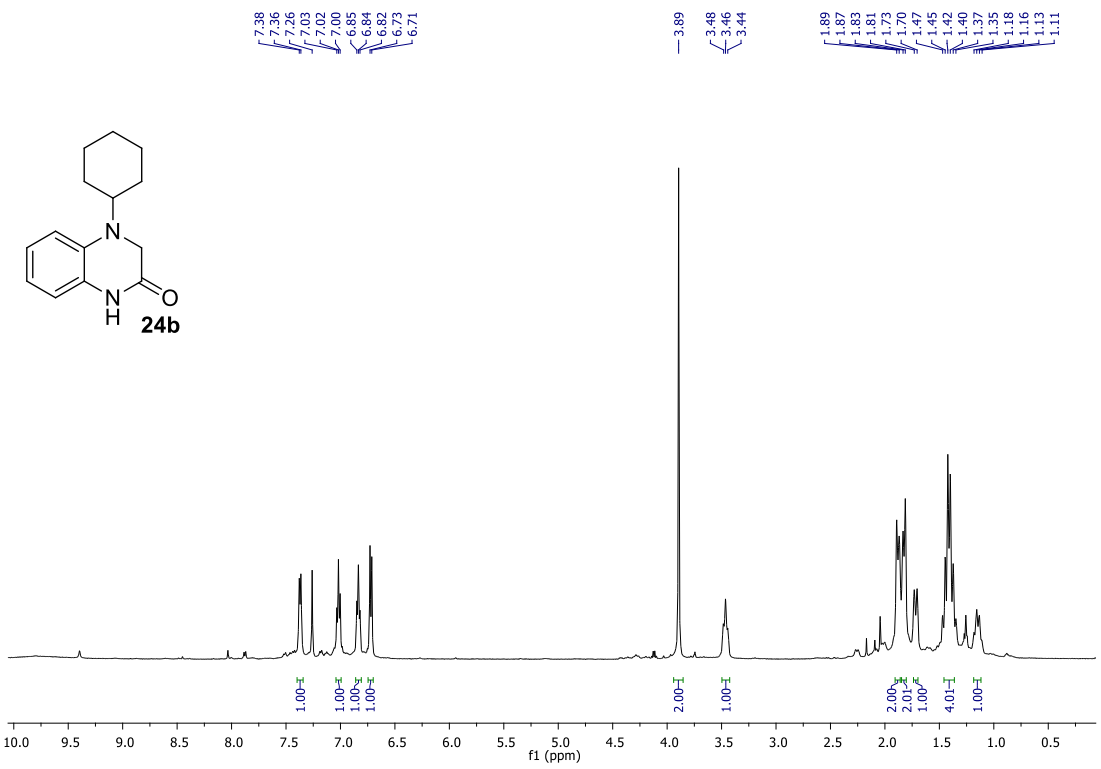


Figure S116. ^{1}H NMR spectrum of 24b.

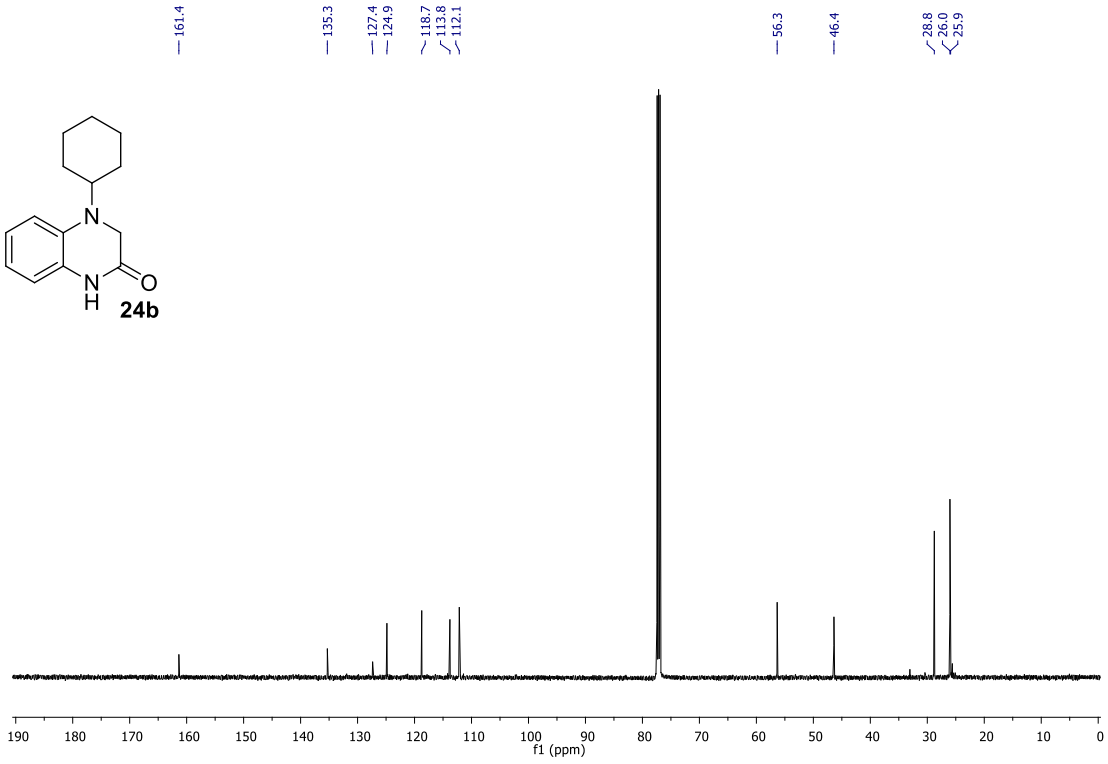


Figure S117. ^{13}C NMR spectrum of 24b.

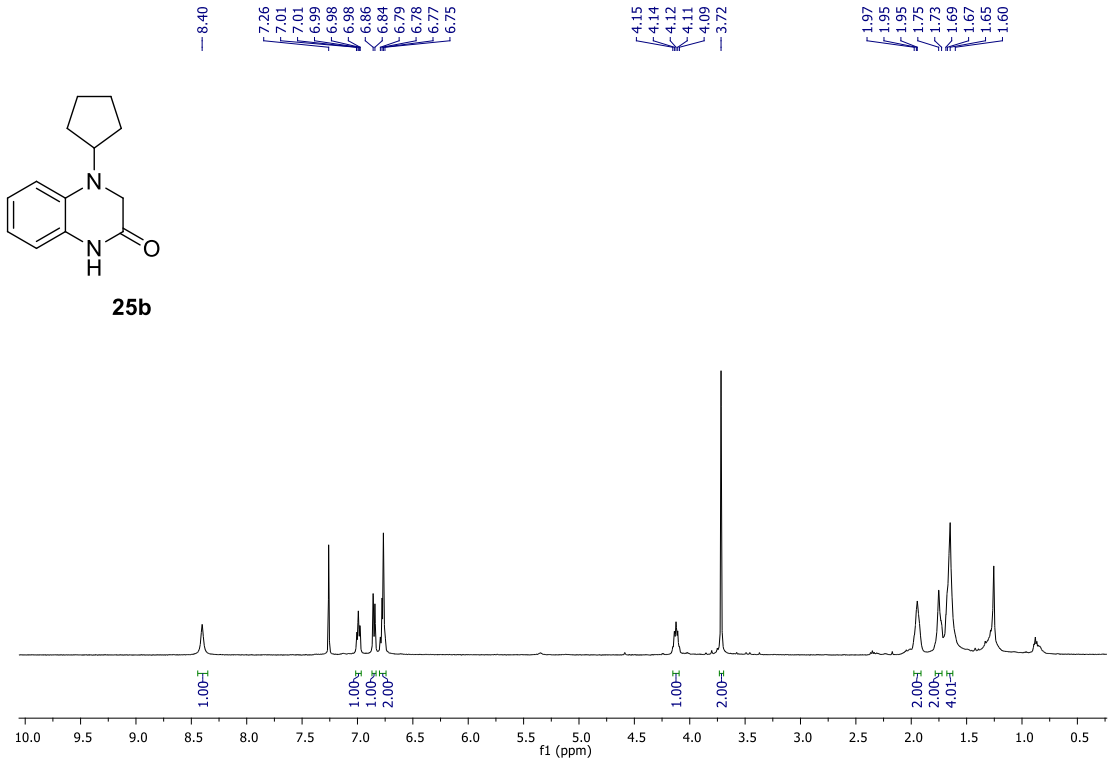


Figure S118. ^{1}H NMR spectrum of 25b.

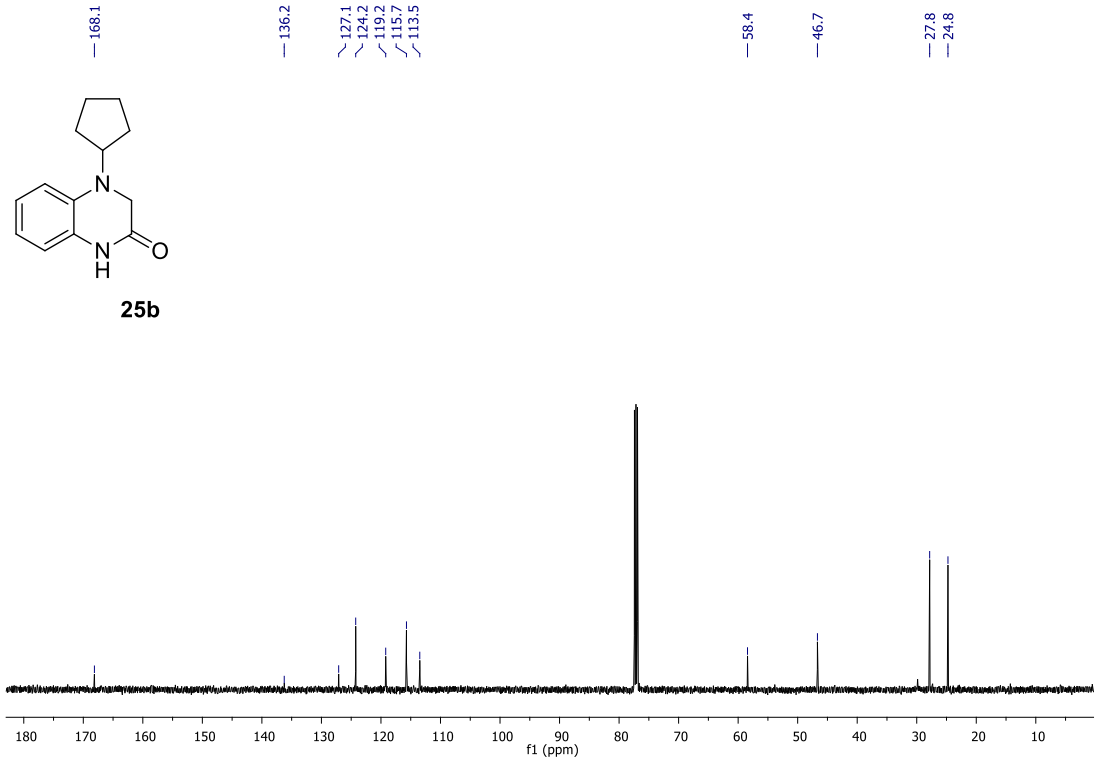


Figure S119. ^{13}C NMR spectrum of 25b.

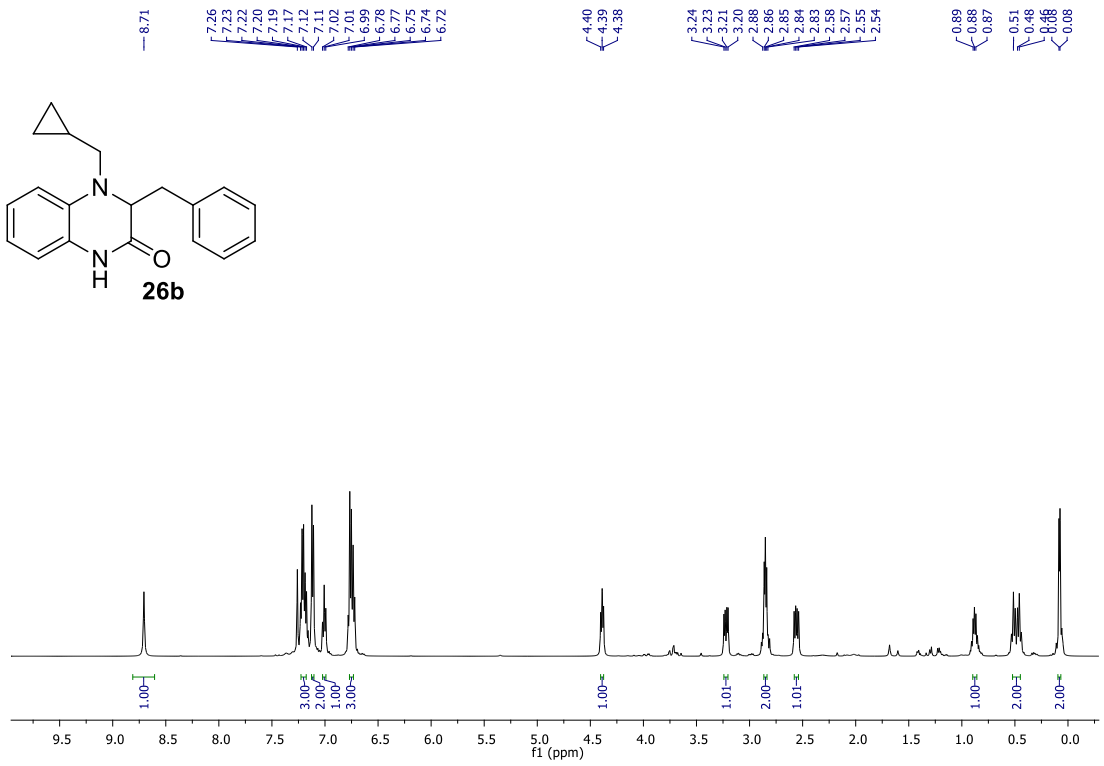


Figure S120. ^{1}H NMR spectrum of 26b.

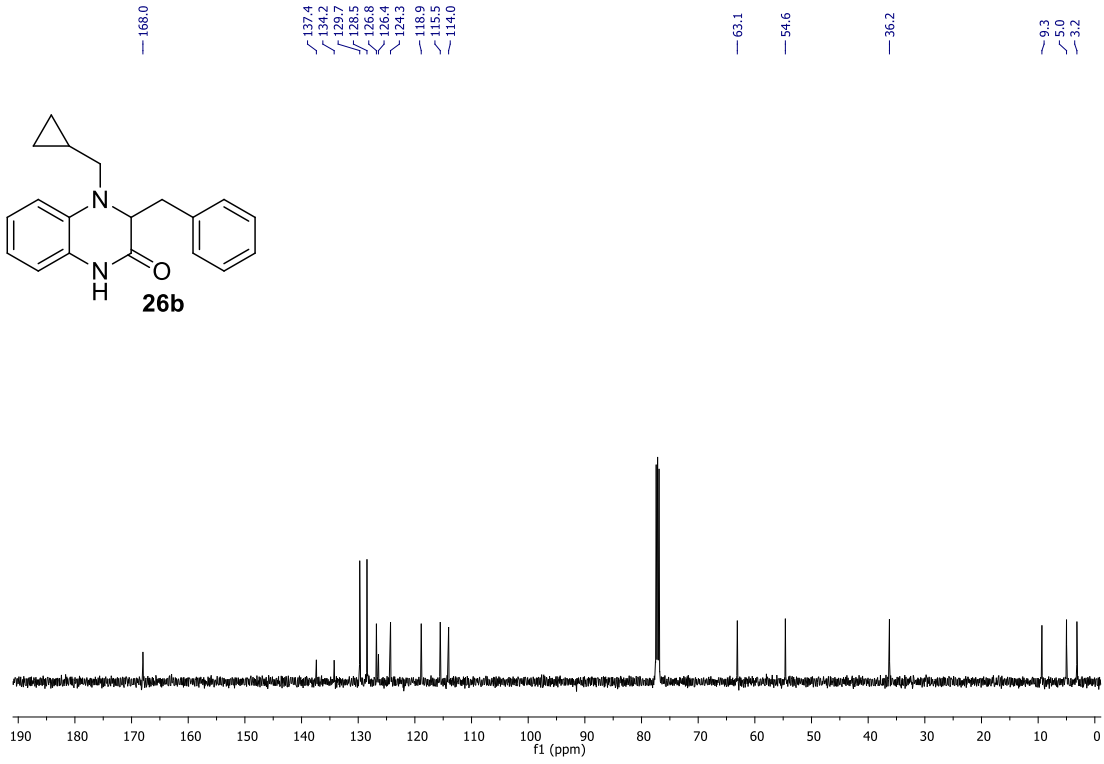


Figure S121. ^{13}C NMR spectrum of 26b.

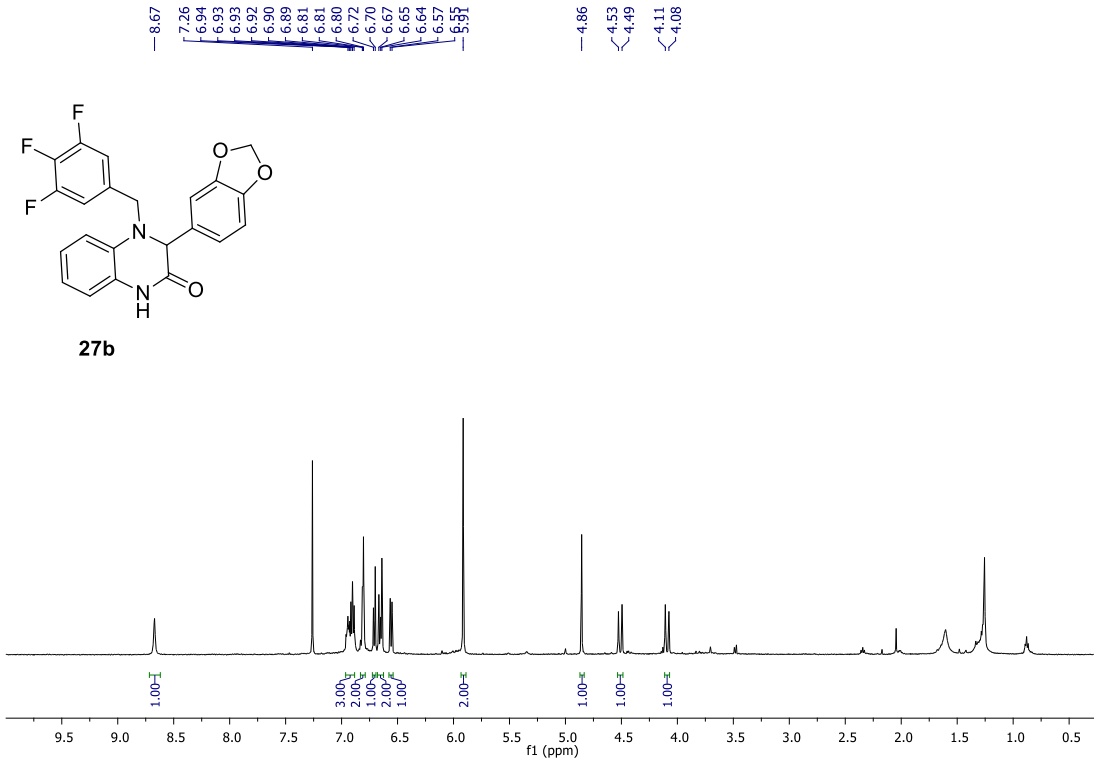


Figure S122. ^{1}H NMR spectrum of 27b.

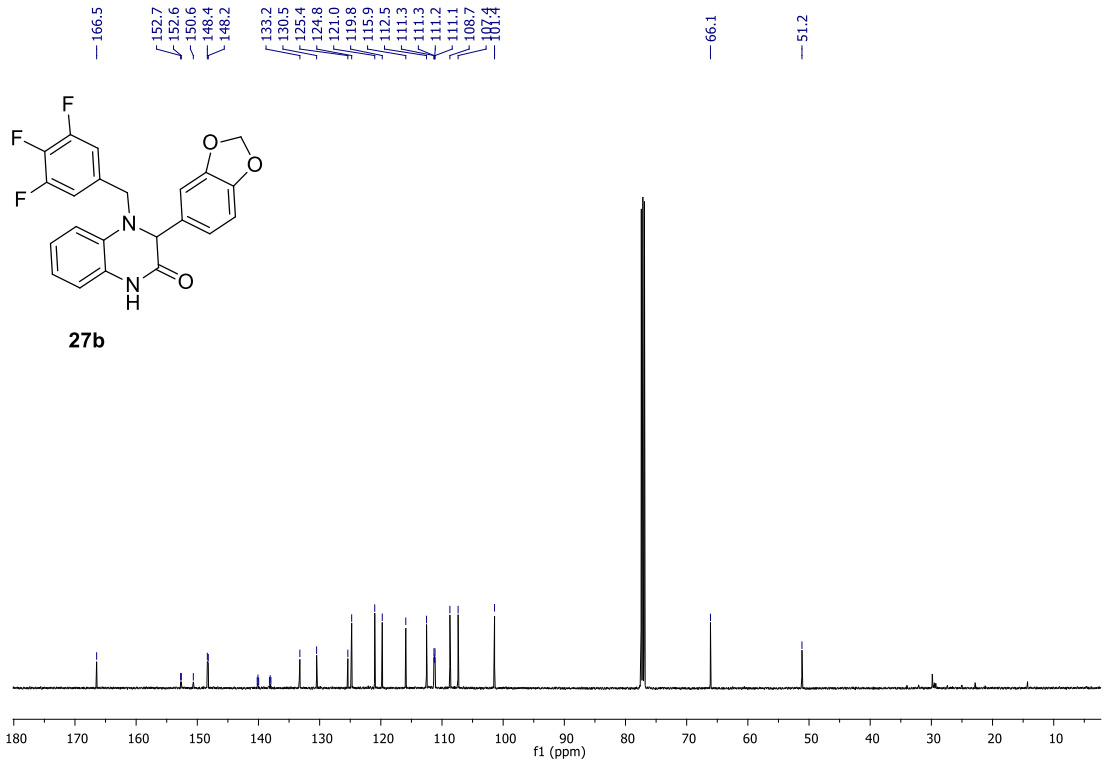


Figure S123. ^{13}C NMR spectrum of 27b.