

Supplementary information

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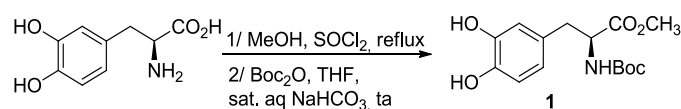
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Precursor syntheses

General experimental information

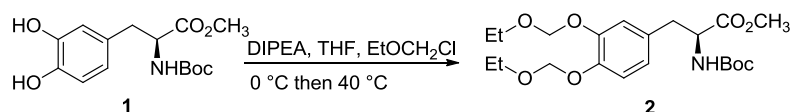
All commercially available reagents and solvents were purchased at the following commercial suppliers: Sigma Aldrich, Alpha Aesar, ABX, Acros Organics, Fisher Scientific or Carlo Erba Reagents. All solvents were dried using common techniques.^[1] Unless otherwise noted, moisture sensitive reactions were conducted under dry argon atmosphere. Analytical thin layer chromatography (TLC) was performed on precoated silica gel 60 F₂₅₄ plates (Macherey-Nagel) and visualized with UV light (254 nm) and/or developed with phosphomolybdic acid (8 wt%) in ethanol. Flash column chromatography was performed on silica gel 60A normal phase, 35–70 μm (Merck or SDS). Uncorrected melting points (mp) were recorded on an electrothermal capillary Digital Melting Point Apparatus IA9300 (Bibby Scientific). NMR spectra (200.13 or 500.13 MHz for ^1H and 50.32 or 125.0 MHz for ^{13}C J-Mod) were recorded on Bruker Avance 200 or 500 instrument with chemical shift values (δ) expressed in parts per million (ppm) relative to residual solvent as standard and coupling constants (J) are given in Hz; ^{19}F NMR spectra (470.3 MHz) were recorded on a Bruker Avance 500 apparatus using trifluorotoluene as internal reference (-63.72 ppm). Infrared spectra (IR) were recorded in the range 4000–440 cm^{-1} on a Nicolet IS10 (Fisher Scientific) with attenuated total reflectance (ATR) accessory. Compounds were analysed by High-Resolution Mass Spectrometry (HRMS) in positive mode (Waters[®] Micromass[®] Q-ToF micro[™] Mass Spectrometer).

(S)-Methyl 2-((tert-butoxycarbonyl)amino)-3-(3,4-dihydroxyphenyl)propanoate
(1)^[2]



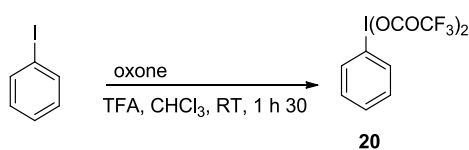
To a solution of L-DOPA (20.0 g, 101.4 mmol) in anhydrous methanol (200 mL), was added dropwise under argon and at 0 °C, thionyl chloride (22 mL, 0.30 mol). Upon full addition of thionyl chloride the starting solid was completely dissolved. The ice-bath was removed and the reaction mixture was heated at reflux for 16 h. After cooling to room temperature, the mixture was evaporated under reduced pressure and co-evaporated with anhydrous toluene (3 x 20 mL). The resulting light yellow solid was suspended in tetrahydrofuran (140 mL) and a saturated aqueous sodium bicarbonate solution was added (140 mL). The solution turned purple. A solution of di-*tert*-butyl-dicarbonate (24.4 g, 0.11 mol) in anhydrous tetrahydrofuran (110 mL) was added portionwise and the reaction mixture was stirred vigorously at room temperature for 2 h. After decantation, the aqueous layer was extracted with ethyl acetate (100 mL). The organic layers were pooled and successively washed with deionised water (2 x 80 mL), a 5% hydrochloric acid solution (80 mL), deionised water (80 mL) and brine (80 mL). The organic layer was dried over magnesium sulfate, filtered and evaporated under reduced pressure. The resulting solid was taken up with cyclohexane (200 mL), filtered and dried overnight under vacuum in a desiccator to afford compound **1** (29.59 g, 95.0 mmol) as an off-white solid. Yield: 95%; mp 137-139 °C (138 °C^[3]); IR (ATR accessory) ν 3450-3100, 1736, 1689, 1530, 1514, 1371, 1256, 1230, 1153 cm⁻¹; ¹H NMR (200.13 MHz, acetone-*d*₆) δ 1.34 (s, 9H), 2.82 (dd, 1H, *J* = 13.8, 8.2 Hz), 2.96 (dd, 1H, *J* = 13.8, 5.4 Hz), 3.65 (s, 3H), 4.31 (m, 1H), 5.99 (d, 1H, *J* = 7.8 Hz), 6.55 (d, 1H, *J* = 8.1 Hz), 6.71 (s, 1H), 6.73 (d, 1H, *J* = 8.1 Hz), 7.77 (s, 2H); ¹³C NMR (50.32 MHz, DMSO-*d*₆) δ 28.2 (3C), 36.0, 51.7, 55.7, 78.3, 115.4, 116.4, 119.8, 128.2, 143.9, 144.9, 155.4, 172.8.

(S)-Methyl 3-(3,4-bis(ethoxymethoxy)phenyl)-2-(tert-butoxycarbonyl)amino)propanoate (**2**)^[2]



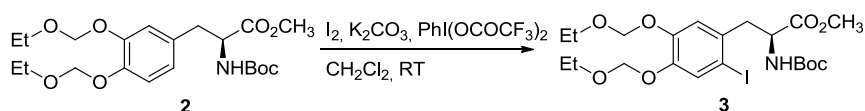
To a solution of compound **1** (6.00 g, 19.3 mmol) in anhydrous tetrahydrofuran (55 mL) was added dropwise *N,N*-diisopropylethylamine (9.83 mL, 56.4 mmol) under argon. After stirring 10 minutes at room temperature, the reaction mixture was cooled to 0 °C before addition of chloromethyl ethyl ether (80%, 6.83 g, 57.8 mmol). The flask was sealed with a glass stopper and the solution was stirred at 40 °C for 15 h. As TLC monitoring (SiO₂, ethyl acetate/cyclohexane, 2/8, v/v) indicated complete conversion, the reaction mixture was cooled to room temperature and methyl *tert*-butyl ether (180 mL) and water (120 mL) were successively added. After decantation, the organic layer was washed successively with deionised water (2 x 100 mL), an aqueous 5% acetic acid solution (2 x 100 mL), an aqueous 10% potassium carbonate solution (2 x 100 mL) and deionised water (3 x 100 mL). The organic layer was dried over magnesium sulfate, filtered and evaporated under reduced pressure to afford compound **2** (8.22 g, 19.2 mmol) as a yellow oil. Yield: 99%; *R_f* (SiO₂, ethyl acetate/cyclohexane, 2/8, v/v): 0.21; IR (ATR accessory) ν 3400-3200, 2976, 1745, 1713, 1508, 1255, 1158 cm⁻¹; ¹H NMR (200.13 MHz, CDCl₃) δ 1.21 (t, 6H, *J* = 7.0 Hz), 1.41 (s, 9H), 3.01 (d, 1H, *J* = 5.5 Hz), 3.75 (m, 7H), 4.56 (m, 1H), 4.96 (d, 1H, *J* = 8.1 Hz), 5.24 (s, 4H), 6.69 (dd, 1H, *J* = 8.1, 1.4 Hz), 6.92 (d, 1H, *J* = 1.4 Hz), 7.08 (d, 1H, *J* = 8.1 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ 15.1, 15.2, 28.3 (3C), 37.7, 52.2, 54.4, 64.3, 64.4, 79.9, 94.1 (2C), 116.6, 117.6, 123.1, 130.0, 146.5, 147.4, 155.2, 172.3; HRMS: *m/z* [M+Na]⁺ measured 450.2103, calculated 450.2104.

Bis(trifluoroacetoxy)phenyl- λ^3 -iodane (**20**)



The titled compound **20** was obtained according to a previously reported procedure^[4]. To a solution of iodobenzene (10.2 g, 50.0 mmol) in a mixture of trifluoroacetic acid (150 mL) and chloroform (50 mL) was added portionwise and at room temperature potassium peroxymonosulfate (oxone[®], 23.05 g, 75.0 mmol). The resulting dark solution, which slowly discolored over time, was stirred for 1.5 h until disappearance of starting material according to TLC monitoring (SiO₂, ethyl acetate/cyclohexane, 3/1, v/v). The solvent was evaporated under reduced pressure ($T^\circ < 40\text{ }^\circ\text{C}$) and the residue was suspended in chloroform (250 mL). The resulting precipitate was filtered and washed with chloroform (2 x 50 mL). The filtrate was evaporated under reduced pressure and the solid was taken up with diethyl ether (150 mL), filtered and washed with diethyl ether (50 mL). The filtrate was evaporated under reduced pressure and the solid was recrystallized (hexane/trifluoroacetic acid, 22/1) and dried overnight in a vacuum desiccator to give compound **20** (16.92 g, 39.3 mmol) as a white solid. Yield: 79%; mp 107-109 $^\circ\text{C}$ (118-120 $^\circ\text{C}$ ^[4]); IR (ATR accessory) ν 1733, 1699, 138, 1359, 1129 cm^{-1} ; ^1H NMR (200.13 MHz, CDCl_3) δ 7.61 (t, 2H, $J = 7.3\text{ Hz}$), 7.75 (t, 1H, $J = 7.3\text{ Hz}$), 8.20 (d, 2H, $J = 7.3\text{ Hz}$).

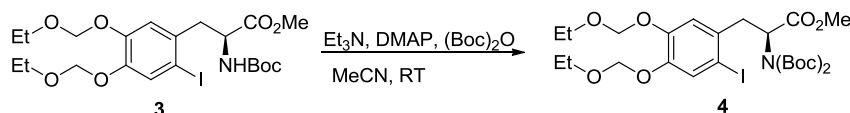
(*S*)-Methyl 3-(4,5-bis(ethoxymethoxy)-2-iodophenyl)-2-(tert-butoxycarbonyl)amino)propanoate (**3**)^[2]



In a round-bottom flask were added under argon iodine (6.26 g, 24.7 mmol) and potassium carbonate (7.87 g, 56.9 mmol). A solution of compound **2** (8.11 g, 19.0 mmol) in anhydrous dichloromethane (100 mL) was added. The reaction mixture was stirred at room temperature for 5 min. Then a solution of freshly prepared *bis*(trifluoroacetoxy)phenyl- λ^3 -iodane (11.83 g, 27.5 mmol) in anhydrous dichloromethane (80 mL) was added dropwise. After stirring at room temperature for

2.5 h, the reaction mixture was washed successively with an aqueous 10% potassium carbonate solution (2 x 150 mL), an aqueous 5% sodium bisulfite solution (2 x 100 mL) and brine (150 mL). The organic layer was dried over magnesium sulfate, filtered and evaporated under reduced pressure. The crude residue was purified by column chromatography (SiO₂, ethyl acetate/cyclohexane, 2/8, v/v) to give compound **3** (7.78 g, 14.1 mmol) as a pale yellow solid. Yield: 74%; mp 66-68 °C; *R_f* (SiO₂, ethyl acetate/cyclohexane 2/8, v/v): 0.21; IR (ATR accessory) ν 3345, 2978, 1734, 1685, 1521, 1497, 1248, 1153 cm⁻¹; ¹H NMR (200.13 MHz, CDCl₃) δ 1.23 (t, 3H, *J* = 7.1 Hz), 1.24 (t, 3H, *J* = 7.1 Hz), 1.35 (s, 9H), 2.99 (dd, 1H, *J* = 14.0, 7.9 Hz), 3.19 (dd, 1H, *J* = 14.0, 5.7 Hz), 3.70 (m, 7H), 4.58 (m, 1H), 5.03 (d, 1H, *J* = 8.4 Hz), 5.19 (s, 4H), 6.97 (s, 1H), 7.54 (s, 1H); ¹³C NMR (50.32 MHz, CDCl₃) δ 15.1 (2C), 28.3 (3C), 42.4, 52.5, 53.8, 64.6 (2C), 79.9, 91.0, 94.1, 94.3, 118.0, 126.9, 133.2, 146.9, 147.4, 155.0, 172.4; HRMS: *m/z* [M+Na]⁺ measured 576.1073, calculated 576.1070.

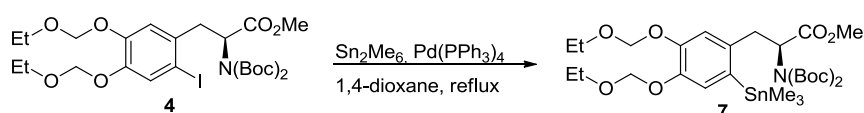
(S)-Methyl 3-(4,5-bis(ethoxymethoxy)-2-iodophenyl)-2-(di(*tert*-butoxycarbonyl))amino)propanoate (**4**)^[2]



To a solution of compound **3** (1.81 g, 3.27 mmol) in anhydrous acetonitrile (20 mL) were added, under argon, triethylamine (1.37 mL, 9.86 mmol) and 4-dimethylaminopyridine (0.20 g, 1.64 mmol). To the reaction mixture was slowly added under stirring over 1 h a solution of di-*tert*-butyl-dicarbonate (1.22 g, 5.59 mmol) in anhydrous acetonitrile (5 mL). The solution was stirred at room temperature for 29 h. After evaporation to dryness, the crude residue was dissolved in dichloromethane (70 mL) and the resulting solution was washed with deionised water (2 x 35 mL). The organic layer was dried over magnesium sulfate, filtered and evaporated under reduced pressure. The residue obtained was purified by column chromatography (SiO₂, ethyl acetate/cyclohexane 1/9, v/v) to give compound **4** as a pale yellow oil (1.83 g, 2.80 mmol) along with recovered starting material **3** (0.20 g, 0.36 mmol) after further elution with ethyl acetate/cyclohexane (2/8, v/v). Yield: 86%; *R_f* (SiO₂, ethyl acetate/cyclohexane, 2/8, v/v): 0.42; IR (ATR accessory) ν 2978,

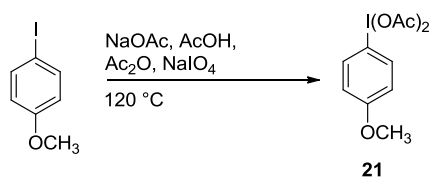
1792, 1745, 1492, 1367, 1248, 1136, 1105 cm^{-1} ; ^1H NMR (200.13 MHz, CDCl_3) δ 1.19 (t, 3H, $J = 7.0$ Hz), 1.20 (t, 3H, $J = 7.0$ Hz), 1.37 (s, 18H), 3.27 (dd, 1H, $J = 14.1$, 11.2 Hz), 3.50 (dd, 1H, $J = 14.1$, 5.1 Hz), 3.70 (m, 7H), 5.19 (m, 5H), 6.98 (s, 1H), 7.54 (s, 1H); ^{13}C NMR (50.32 MHz, CDCl_3) δ 15.2 (2C), 28.0 (6C), 40.3, 52.4, 57.8, 64.6 (2C), 83.1 (2C), 90.8, 94.2, 94.4, 118.7, 126.6, 134.3, 146.7, 148.0, 151.5 (2C), 170.6; HRMS: m/z $[\text{M}+\text{Na}]^+$ measured 676.1584, calculated 676.1595.

(S)-Methyl 3-(4,5-bis(ethoxymethoxy)-2-trimethylstannylphenyl)-2-(di(*tert*-butoxycarbonyl))amino)propanoate (**7**)



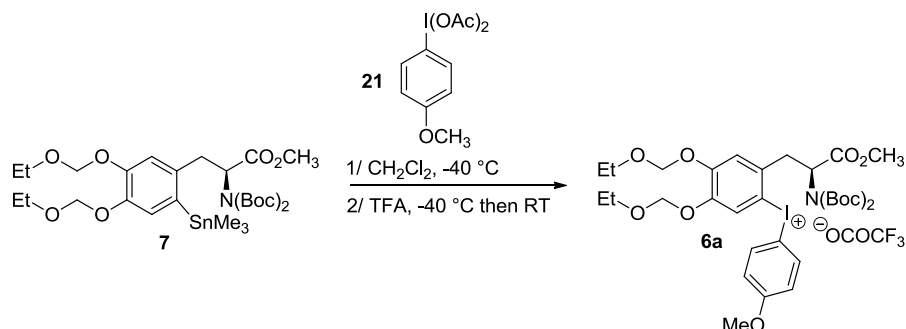
To a solution of compound **4** (2.00 g, 3.06 mmol) in anhydrous 1,4-dioxane (50 mL), previously degassed by argon bubbling, were successively added under argon hexamethylditin (2.00 g, 6.10 mmol) and tetrakis(triphenylphosphine)palladium(0) (177 mg, 153 μmol , 5% eq). The reaction mixture was refluxed for 1 h 30. At this time, the reaction color turned to dark. After cooling to room temperature, the reaction mixture was filtered through a pad of celite 545, which was washed with ethyl acetate (3 x 10 mL). The filtrate was evaporated to dryness under reduced pressure and the residue was purified by column chromatography (SiO_2 , ethyl acetate/cyclohexane, 2/8, v/v) to give compound **7** as a light yellow solid (1.93 g, 2.80 mmol). Yield: 91%; R_f (SiO_2 , ethyl acetate/cyclohexane, 2/8, v/v): 0.41; mp 78-80 $^\circ\text{C}$; IR (ATR accessory) ν 2977, 1744, 1699, 1368, 1245, 1136, 1105, 1008 cm^{-1} ; ^1H NMR (200.13 MHz, CDCl_3) δ 0.31 (s, 9H, $^2J_{\text{H}-^{119}\text{Sn}} = 54.2$ Hz, $^2J_{\text{H}-^{117}\text{Sn}} = 51.9$ Hz), 1.21 (m, 6 H), 1.36 (s, 18H), 3.25 (m, 2H), 3.75 (m, 7H), 4.95 (t, 1H, $J = 8.2$ Hz), 5.24 (m, 4H), 6.94 (s, 1H, $^4J_{\text{H}-^{117}-^{119}\text{Sn}} = 18.2$ Hz), 7.21 (s, 1H, $^3J_{\text{H}-^{119}\text{Sn}} = 51.8$ Hz, $^3J_{\text{H}-^{117}\text{Sn}} = 49.6$ Hz); ^{13}C NMR (50.32 MHz, CDCl_3) δ -8.1 (3C, $^1J_{\text{C}-^{119}\text{Sn}} = 349$ Hz, $^1J_{\text{C}-^{117}\text{Sn}} = 333$ Hz), 15.2 (2C), 27.9 (6C), 38.2 (1C, $^3J_{\text{C}-^{117}-^{119}\text{Sn}} = 26$ Hz), 52.4, 60.0, 64.1, 64.4, 83.1 (2C), 94.2, 94.6, 118.0 (1C, $^2J_{\text{C}-^{117}-^{119}\text{Sn}} = 45$ Hz), 124.9 (1C, $^2J_{\text{C}-^{117}-^{119}\text{Sn}} = 44$ Hz), 135.0, 139.0 (1C, $^3J_{\text{C}-^{117}-^{119}\text{Sn}} = 31.5$ Hz), 145.6, 148.0, 151.6 (2C), 170.8; HRMS: m/z $[\text{M}+\text{Na}]^+$ measured 692.2469, calculated 692.2457.

p-(Diacetoxyiodo)anisole (**21**)



The titled compound was obtained according to a previously reported procedure^[5]. To a stirred suspension of sodium acetate (9.00 g, 0.11 mol) in glacial acetic acid (75 mL) were successively added, under argon, acetic anhydride (7.5 mL, 79.5 mmol), sodium periodate (11.0 g, 51.4 mmol) and 4-iodoanisole (11.7 g, 48.1 mmol). The solution was stirred at 120 °C (external temperature) for 4 h. After cooling to room temperature, the reaction mixture was diluted with water (200 mL) and extracted with dichloromethane (3 x 100 mL). The combined extracts were dried over magnesium sulfate, filtered and evaporated under reduced pressure. The residue was taken up with a mixture of hexane (300 mL) and acetic acid (2 mL) and sonicated for 30 min. The solid was filtered and washed with hexane (2 x 30 mL). The solid was taken up in diethyl ether (60 mL) and the mixture was warmed to reflux under stirring. Dichloromethane was slowly added until complete dissolution. The hot solution was filtered and the filtrate was evaporated under reduced pressure. The resulting solid was taken up with diethyl ether (30 mL) and filtered to give compound **21** (10.03 g, 28.5 mmol) as a white solid. Yield: 77%; mp 93-95 °C (92.4-96 °C^[6]); IR (ATR accessory) ν 1638, 1582, 1571, 1490, 1365, 1254, 1175 cm⁻¹; ¹H NMR (200.13 MHz, CDCl₃) δ 1.99 (s, 6H), 3.86 (s, 3H), 6.96 (d, 2H, *J* = 9.1 Hz), 8.01 (d, 2H, *J* = 9.1 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ 20.5 (2C), 55.7, 111.7, 116.8 (2C), 137.2 (2C), 162.3, 176.5 (2C).

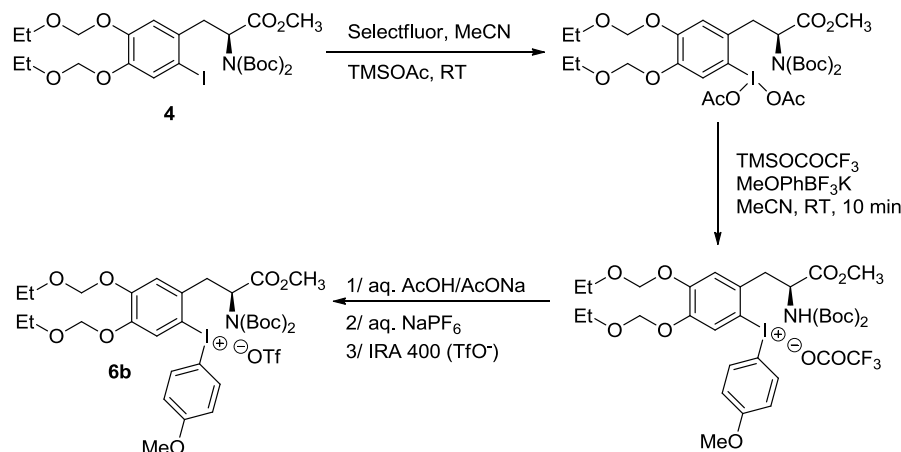
((2S)-(4,5-bis(benzyloxy)-2-(2-di(*tert*-butoxycarbonyl)amino-3-methoxy-3-oxo)propyl)phenyl)(4'-methoxyphenyl)iodonium trifluoroacetate (6a)



To a solution of compound **7** (1.90 g, 2.75 mmol) in anhydrous dichloromethane (30 mL) was slowly added, under argon and at $-40\text{ }^{\circ}\text{C}$, a solution of *p*-(diacetoxyiodo)anisole (90%, 1.23 g, 3.67 mmol) in anhydrous dichloromethane (12 mL). The solution was stirred at $-40\text{ }^{\circ}\text{C}$ for 1 h (complete discoloration of the solution was observed), before slow addition of a solution of trifluoroacetic acid (421 μL , 5.50 mmol) in anhydrous dichloromethane (12 mL). Increasing the concentration of trifluoroacetic acid more than 2 eq. resulted in the deprotection of one of the N-Boc groups. The reaction mixture was slowly warmed to room temperature over 2 h and stirred for an additional 3 h. After evaporation of the solvent under reduced pressure, the residue was purified by column chromatography (SiO_2 , dichloromethane/ethanol 98/2 to 95/5, v/v) to give compound **6a** as a white solid (1.78 g, 2.04 mmol). Yield: 74%; mp $54\text{--}56\text{ }^{\circ}\text{C}$; R_f (SiO_2 , dichloromethane/ethanol, 95/5, v/v): 0.15; IR (ATR accessory) ν 2979, 1740, 1662, 1133 cm^{-1} ; ^1H NMR (200.13 MHz, CDCl_3) δ 1.17 (t, 3H, $J = 7.1\text{ Hz}$), 1.24 (t, 3H, $J = 7.1\text{ Hz}$), 1.43 (s, 18H), 3.32 (dd, 1H, $J = 8.5, 14.7\text{ Hz}$), 3.50–3.85 (m, 11H), 5.16 (m, 3H), 5.25 (s, 2H), 6.89 (d, 2H, $J = 9.0\text{ Hz}$), 7.20 (s, 1H), 7.59 (s, 1H), 7.92 (d, 2H, $J = 9.0\text{ Hz}$); ^{13}C NMR (50.32 MHz, CDCl_3) δ 15.0, 15.1, 28.0 (6C), 38.9, 53.0, 55.7, 58.5, 64.8, 65.1, 84.5 (2C), 94.2, 94.3, 106.2, 111.7, 117.6 (2C), 118.8, 123.5, 134.5, 136.5 (2C), 148.0, 150.6, 151.9, 162.4 (2C), 170.3; ^{19}F (470.6 MHz, CDCl_3) δ -76.24 ppm ; HRMS: m/z $[\text{M}-\text{CF}_3\text{CO}_2]^+$ measured 760.2191, calculated 760.2188.

((2S)-4,5-bis(benzyloxy)-2-(2-di(tert-butoxycarbonyl)amino-3-methoxy-3-oxo)propyl)phenyl)(4'-methoxyphenyl)iodonium trifluoromethanesulfonate (6b)^[2]

Method A :

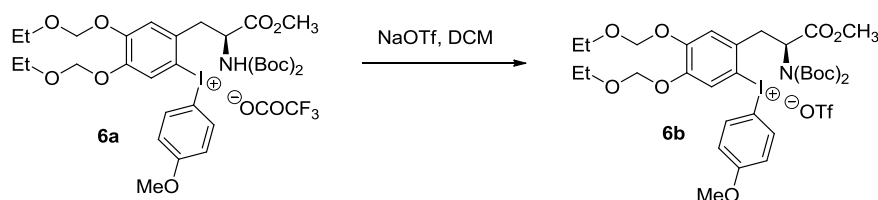


To a solution of compound **4** (0.70 g, 1.07 mmol) in anhydrous acetonitrile (6 mL) was added, under argon, a solution of selectfluor (531 mg, 1.50 mmol) and trimethylsilyl acetate (466 μ L, 3.11 mmol) in anhydrous acetonitrile (34 mL). The solution was stirred at room temperature for 6.5 h, before successive addition of potassium (4-methoxyphenyl)trifluoroborate (229 mg, 1.07 mmol) and trimethylsilyl trifluoroacetate (185 μ L, 1.23 mmol). The reaction was stirred at room temperature for 10 min and the solvent was removed under reduced pressure. The brown red oil was placed under vacuum for 1 h before suspension in dichloromethane (20 mL) and the resulting solution was placed in an ultrasonic bath for 3 min. After decantation, the white residue was left behind (this material comprises selectfluor-derived and inorganic salts). The organic phase was washed with acetate buffer (0.5 M sodium acetate/0.5 M acetic acid, pH = 5) (3 x 6 mL), dried over magnesium sulfate, filtered and evaporated under reduced pressure. The oil was dissolved in acetonitrile (6 mL) before addition of an aqueous sodium hexafluorophosphate solution (0.54 g in 20 mL). The mixture was vigorously shaken and extracted with dichloromethane (3 x 10 mL). The organic layers were pooled, dried over magnesium sulfate, filtered and evaporated under reduced pressure. The residue was dissolved in an acetonitrile/water mixture (90/10, v/v, 2 mL) and loaded onto an anionic-exchange resin previously prepared as follow : a glass column (2 cm diameter) was filled with IRA-400 (Cl) ion-exchange resin and deionised water (100 mL) until the resin

reached 15 cm in length. A 1 M aqueous solution of sodium trifluoromethanesulfonate (500 mL) (freshly prepared by neutralisation to pH = 7 of a 2 M aqueous sodium trifluoromethanesulfonic acid solution with a 2 M aqueous sodium hydroxide solution) was slowly eluted through the ion-exchange column. Periodically, eluent fractions were collected and analyzed for the presence of chloride with an aqueous silver nitrate solution. Upon exchange completion, the column was washed with deionized water (500 mL) and then equilibrated with an acetonitrile/water mixture (90/10, v/v, 500 mL).

After elution with acetonitrile/water mixture (90/10, v/v, 50 mL), the solvent was removed under reduced pressure (< 40°C) and co-evaporated with anhydrous acetonitrile (2 x 10 mL). The resulting oil was purified by column chromatography (SiO₂, dichloromethane/ethanol, 98/2 to 96/4, v/v) to give a light yellow oil which was placed overnight in a vacuum desiccator to give compound **6b** as an off-white solid (358 mg, 0.39 mmol). Yield: 36%; mp 62-64 °C; R_f (SiO₂, dichloromethane/ethanol, 96/4, v/v): 0.17; IR (ATR accessory) ν 2979, 1731, 1694, 1369, 1245, 1137 cm⁻¹; ¹H NMR (200.13 MHz, CDCl₃) δ 1.06 (t, 3H, *J* = 7.1 Hz), 1.19 (t, 3H, *J* = 7.1 Hz), 1.44 (s, 18H), 3.30 (dd, 1H, *J* = 14.4, 7.2 Hz), 3.64 (m, 8H), 3.80 (s, 3H), 5.13 (m, 3H), 5.25 (s, 2H), 6.92 (d, 2H, *J* = 9.1 Hz), 7.23 (s, 1H), 7.56 (s, 1H), 7.91 (d, 2H, *J* = 9.1 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ 15.0 (2C), 28.0 (6C), 39.4, 53.0, 55.8, 58.4, 64.9, 65.1, 84.3 (2C), 94.2, 94.3, 103.0, 109.2, 118.0 (2C), 118.8, 122.9, 134.6, 137.3 (2C), 148.2, 151.0, 151.8, 162.9, 170.6; ¹⁹F (470.6 MHz, CDCl₃) δ -79.21 ppm. HRMS: *m/z* [M-OTf]⁺ measured 760.2194, calculated 760.2188.

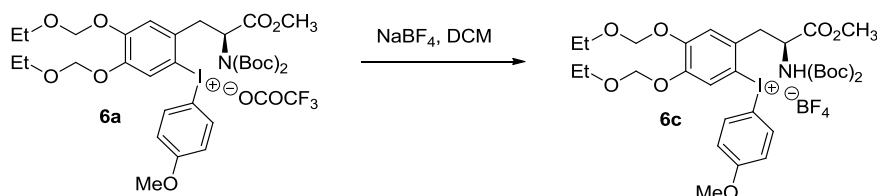
Method B :



A solution of compound **6a** (290 mg, 0.33 mmol) in dichloromethane (15 mL) was washed with an aqueous solution of sodium trifluoromethane sulfonate (1 M, 30 mL). The aqueous layer was extracted with dichloromethane (2 x 15 mL). The organic layers were combined, and concentrated under reduced pressure. These washing steps were reproduced four time, before purification of the residue by column

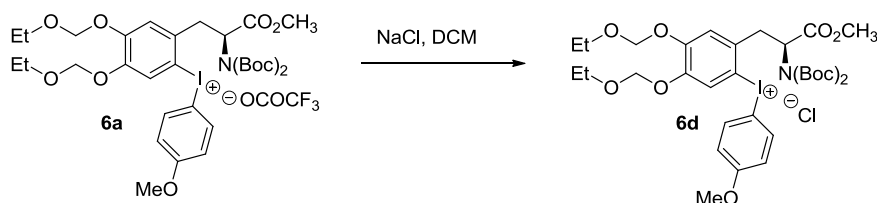
chromatography (SiO₂, dichloromethane/ethanol, 95/5, v/v) to give compound **6b** as an off-white precipitate (263 mg, 0.28 mmol). Yield: 85%.

((2*S*)-(4,5-bis(benzyloxy)-2-(2-di(*tert*-butoxycarbonyl)amino-3-methoxy-3-oxo)propyl)phenyl)(4'-methoxyphenyl)iodonium tetrafluoroborate (**6c**)



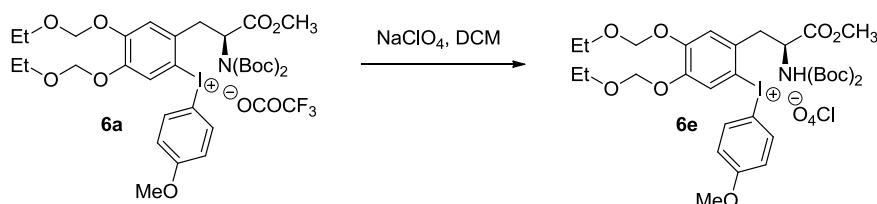
A solution of compound **6a** (100 mg, 0.11 mmol) in dichloromethane (5 mL) was washed with an aqueous solution of sodium tetrafluoroborate (1 M, 10 mL). The aqueous layer was extracted with dichloromethane (2 x 5 mL). The organic layers were combined, and concentrated under reduced pressure. These washing steps were reproduced four time. The obtained residue was then purified by column chromatography (SiO₂, dichloromethane/ethanol, 95/5, v/v) to give compound **6c** as an off-white solid (86 mg, 0.10 mmol). Yield: 91%; *R_f* (SiO₂, dichloromethane/ethanol, 95/5, v/v): 0.14; IR (ATR accessory) ν 2978, 1729, 1487, 1368, 1136-970; ¹H NMR (200.13 MHz, CDCl₃) δ 1.09 (t, 3H, *J* = 7.1 Hz), 1.22 (t, 3H, *J* = 7.1 Hz), 1.47 (s, 18H), 3.33 (dd, 1H, *J* = 14.5, 6.7 Hz), 3.57-3.76 (m, 5H), 3.77 (s, 3H), 3.83 (s, 3H), 5.14 (m, 3H), 5.28 (s, 2H), 6.97 (d, 2H, *J* = 9.0 Hz), 7.27 (s, 1H), 7.61 (s, 1H), 7.97 (d, 2H, *J* = 9.0 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ 15.0 (2C), 28.0 (6C), 39.6, 53.1, 55.8, 58.5, 64.9, 65.2, 84.5, 94.4 (2C), 101.8, 108.6, 118.2 (2C), 118.3, 118.8, 122.8, 134.6, 137.5 (2C), 148.3, 151.2, 151.8 (2C), 163.1, 170.7; ¹⁹F (470.6 MHz, CDCl₃) δ -150.12 ppm; HRMS: *m/z* [M-BF₄]⁺ measured 760.2201, calculated 760.2188.

((2S)-4,5-bis(benzyloxy)-2-(2-di(*tert*-butoxycarbonyl)amino-3-methoxy-3-oxo)propyl)phenyl)(4'-methoxyphenyl)iodonium chloride (**6d**)



A solution of compound **6a** (87 mg, 0.11 mmol) in dichloromethane (5 mL) was washed with an aqueous solution of sodium chloride (1 M, 10 mL). The aqueous layer was extracted with dichloromethane (2 x 5 mL). The organic layers were combined, and concentrated under reduced pressure. These washing steps were reproduced four time, before purification of the residue by column chromatography (SiO₂, dichloromethane/ethanol, 95/5, v/v) to give compound **6d** as an off-white solid (87 mg, 0.11 mmol). Yield: 95%; *R*_f (SiO₂, dichloromethane/ethanol, 95/5, v/v): 0.17; IR (ATR accessory) ν 2978, 1729, 1487, 1368, 1136-970; ¹H NMR (200.13 MHz, CDCl₃) δ 1.07 (t, 3H, *J* = 7.1 Hz), 1.15 (t, 3H, *J* = 7.1 Hz), 1.37 (s, 18H), 3.32 (dd, 1H, *J* = 14.5, 9.6 Hz), 3.53-3.72 (m, 5H), 3.74 (s, 3H), 3.75 (s, 3H), 5.18 (m, 5H), 6.82 (d, 2H, *J* = 9.1 Hz), 7.10 (s, 1H), 7.59 (s, 1H), 7.91 (d, 2H, *J* = 9.1 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ 15.0 (2C), 28.0 (6C), 38.4, 52.7, 55.6, 58.1, 64.6, 64.9, 83.8, 94.0, 94.2 (2C), 109.4, 115.3, 117.2 (2C), 118.8, 123.6, 134.2, 135.9 (2C), 147.5, 150.1, 151.7 (2C), 161.7, 170.0; HRMS: *m/z* [M-Cl]⁺ measured 760.2167, calculated 760.2188.

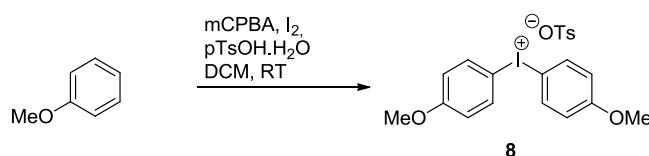
((2S)-4,5-bis(benzyloxy)-2-(2-di(*tert*-butoxycarbonyl)amino-3-methoxy-3-oxo)propyl)phenyl)(4'-methoxyphenyl)-λ³-iodane perchlorate (**6e**)



A solution of compound **6a** (100 mg, 0.11 mmol) in dichloromethane (5 mL) was washed with an aqueous solution of sodium perchlorate (1 M, 10 mL). The aqueous layer was extracted with dichloromethane (2 x 5 mL). The organic layers were combined, and concentrated under reduced pressure. These washing steps were

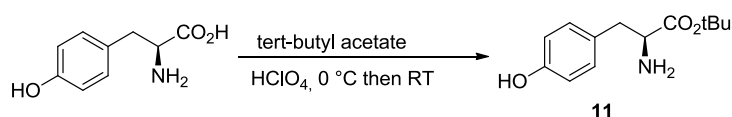
reproduced four time, before purification of the residue by column chromatography (SiO₂, dichloromethane/ethanol, 95/5, v/v) to give compound **6e** as an off-white precipitate (82 mg, 95.3 μmol). Yield: 87%; mp 64-66 °C; R_f (SiO₂, dichloromethane/ethanol, 95/5, v/v): 0.32; IR (ATR accessory) ν 2978, 1745, 1489, 1250, 1136; ¹H NMR (500.13 MHz, CDCl₃) δ 1.08 (t, 3H, *J* = 7.1 Hz), 1.20 (t, 3H, *J* = 7.1 Hz), 1.46 (s, 18H), 3.32 (dd, 1H, *J* = 14,5, 7.0 Hz), 3.62 (m, 3H), 3.72 (m, 2H), 3.76 (s, 3H), 3.82 (s, 3H), 5.10 (m, 1H), 5.17 (m, 2H), 5.25 (m, 2H), 6.95 (d, 2H, *J* = 9.1 Hz), 7.25 (s, 1H), 7.59 (s, 1H), 7.96 (d, 2H, *J* = 9.1 Hz); ¹³C NMR (125.0 MHz, CDCl₃) δ 15.1 (2C), 28.1 (6C), 39.7, 53.1, 55.9, 58.6, 65.0, 65.2, 84.5 (2C), 94.3, 94.5, 102.3, 109.0, 118.3 (2C), 119.0, 123.1, 134.8, 137.5 (2C), 148.4, 151.3, 151.9 (2C), 163.2, 170.7; HRMS: *m/z* [M-ClO₄]⁺ measured 760.2203, calculated 760.2188.

bis(4-methoxyphenyl)iodonium *p*-toluenesulfonate (**8**)



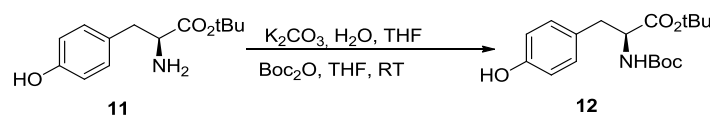
Compound **8** was synthesized according a protocol already described in the literature.^[7] Briefly, iodine (671 mg, 2.64 mmol), *m*-chloroperbenzoic acid (*m*CPBA) (1.14 g, 6.61 mmol) were added to a solution of anisole (1.00 mL, 9.25 mmol) in dichloromethane (57 mL). Then, *p*-toluenesulfonic acid monohydrate (1.70 g, 8.99 mmol) was slowly added and the reaction mixture was stirred at room temperature for 16 h before dilution with water (50 mL). After decantation, the aqueous layer was extracted with dichloromethane (3 x 50 mL). The organic layers were combined, dried over magnesium sulfate and concentrated under reduced pressure. The residue was then triturated with diethylether (20 mL). The solid formed was collected by filtration under vacuum and dried to give the compound **8** (588 mg, 1.15 mmol). Yield: 44%; mp: 134-136°C (Litt: 138-139 °C)^[8]; IR (ATR accessory) ν 3084, 2979, 1750, 1487, 1250, 1224, 1162; ¹H NMR (200.13 MHz, CD₃OD) δ 2.35 (s, 3H), 3.82 (s, 6H), 7.01 (d, 4H, *J* = 8.9 Hz), 7.20 (d, 2H, *J* = 8.0 Hz), 7.68 (d, 2H, *J* = 8.0 Hz), 8.03 (d, 4H, *J* = 8.9 Hz); ¹³C NMR (50.32 MHz, CD₃OD) δ 21.3, 56.3 (2C), 105.2 (2C), 118.7 (4C), 126.9 (2C), 129.8 (2C), 138.1, 141.6, 143.6, 164.3 (2C).

L-Tyrosine *tert*-butyl ester (**11**)



The titled compound was obtained according to reported procedure^[9]. To a suspension of L-tyrosine (3.82 g, 21.1 mmol) in *tert*-butyl acetate (40 mL) was added dropwise at $0\text{ }^\circ\text{C}$, perchloric acid (70 wt%, 2.90 mL, 33.6 mmol). The reaction mixture became clear. The solution was warmed to room temperature and stirred for 12 h before addition of water (50 mL). After decantation, the organic layer was washed with a 1 N hydrochloric acid solution (30 mL). The pH of the combined aqueous layers was adjusted to 9 by addition of a 10% aqueous potassium carbonate solution before extraction with dichloromethane (3 x 20 mL). The combined organic layers were dried over magnesium sulfate, filtered and concentrated under reduced pressure. The residue obtained was purified by column chromatography (SiO_2 , ethyl acetate/cyclohexane, 9/1, v/v) to give compound **11** (2.26 g, 9.52 mmol) as a white solid. Yield: 45%; mp $142\text{--}144\text{ }^\circ\text{C}$ (lit. $140\text{--}143\text{ }^\circ\text{C}$ ^[10]); R_f (SiO_2 , ethyl acetate/cyclohexane, 9/1, v/v): 0.20; IR (ATR accessory) ν 3344, 2977, 2911, 2604, 1717, 1518, 1367, 1257, 1157 cm^{-1} ; ^1H NMR (200.13 Hz, $\text{DMSO-}d_6$) δ 1.37 (s, 9H), 2.71 (dd, 1H, $J = 6.9, 13.4\text{ Hz}$), 2.83 (dd, 1H, $J = 6.3, 13.4\text{ Hz}$), 3.46 (m, 1H), 6.74 (d, 2H, $J = 8.5\text{ Hz}$), 7.06 (d, 2H, $J = 8.5\text{ Hz}$); ^{13}C NMR (50.32 Hz, $\text{DMSO-}d_6$) δ 27.7 (3C), 39.5 (1C + $\text{DMSO-}d_6$), 56.4, 79.7, 114.8 (2C), 128.0, 130.3 (2C), 155.8, 174.4.

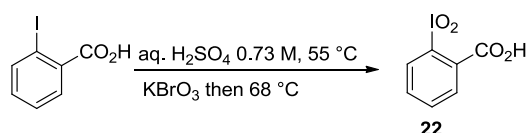
(2S)-*tert*-Butyl 2-((*tert*-butoxycarbonyl)amino)-3-(4-hydroxyphenyl)propanoate (**12**)



The titled compound was obtained according to a previously reported procedure^[11]. To a solution of compound **11** (10.9 g, 45.9 mmol) in a mixture of water and tetrahydrofuran (55 mL, 1/1, v/v) were successively added a solution of potassium carbonate (12.7 g, 91.9 mmol) in water (55 mL) and a solution of di-*tert*-butyl dicarbonate (11.0 g, 50.4 mmol) in tetrahydrofuran (55 mL). The reaction mixture was

stirred at room temperature for 3 h and then extracted with ethyl acetate (3 x 50 mL). The combined organic layers were dried over magnesium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by column chromatography (SiO₂, ethyl acetate/cyclohexane, 8/2, v/v) to give **12** (10.96 g, 32.5 mmol) as a white solid. Yield: 71%; mp 114-116 °C (lit. 112.8-113.0 °C^[12]); R_f (SiO₂, ethyl acetate/cyclohexane, 8/2, v/v): 0.95; IR (ATR accessory) ν 3347, 2978, 1687, 1542, 1519, 1307, 1254, 1151 cm⁻¹; ¹H NMR (200.13 MHz, CDCl₃) δ 1.42 (s, 18H), 2.97 (d, 2H, *J* = 5.7 Hz), 4.40 (m, 1H), 5.00 (m, 1H), 6.73 (d, 2H, *J* = 8.2 Hz), 7.02 (d, 2H, *J* = 8.2 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ 28.1 (3C), 28.4 (3C), 37.8, 55.2, 80.1, 82.4, 115.4 (2C), 127.7, 130.7 (2C), 155.3, 155.5, 171.4; HRMS: *m/z* [M+Na]⁺ measured 360.1776, calculated 360.1787.

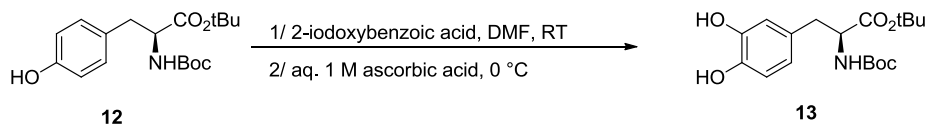
2-Iodoxybenzoic acid (**22**)



The titled compound was obtained according to a previously reported procedure.^[13]

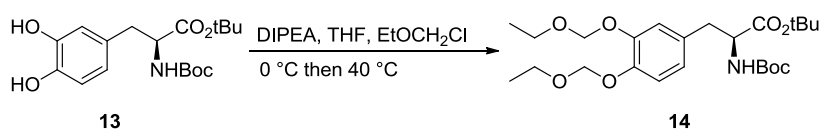
Caution: explosive under excessive heating (> 200 °C) or impact.^[14] To a solution of 2-iodobenzoic acid (14.0 g, 56.4 mmol) in a 0.73 M aqueous sulfuric acid solution (125 mL) at 55 °C was added portionwise potassium bromate (12.47 g, 74.7 mmol) over 30 min. The reaction was stirred at 68 °C for 4 h. After cooling to room temperature, the mixture was filtered and the solid was washed successively with deionised water (150 mL), acetone (120 mL) and anhydrous diethyl ether (120 mL). The resulting solid was dried overnight under vacuum in a dessicator to afford compound **22** (15.52 g, 55.4 mmol) as a white solid. Yield: 98%. mp 225-227 °C (lit. 224-225 °C^[15]); IR (ATR accessory) ν 3300-2700, 1633, 1436, 1331, 1295 cm⁻¹; ¹H NMR (200.13 MHz, DMSO-*d*₆) δ 7.85 (t, 1H, *J* = 7.2 Hz), 8.01 (m, 2H), 8.15 (d, 1H, *J* = 7.7 Hz).

(*S*)-*tert*-Butyl 2-((*tert*-butoxycarbonyl)amino)-3-(3,4-dihydroxyphenyl)propanoate
(13)



To a solution of compound **12** (10.55 g, 31.3 mmol) in anhydrous *N,N*-dimethylformamide (120 mL), was added under argon and at room temperature, freshly prepared 2-iodoxybenzoic acid (10.52 g, 37.6 mmol). The reaction mixture was stirred at room temperature for 30 min then cooled to 0 °C before dropwise addition of an aqueous 1 M ascorbic acid solution (130 mL). The mixture was stirred 30 min at 0 °C before addition of dichloromethane (250 mL). After decantation, the aqueous layer was extracted with dichloromethane (3 x 100 mL). The organic layers were combined and washed with an aqueous 10% sodium bicarbonate solution (2 x 50 mL), dried over magnesium sulfate, filtered and evaporated under reduced pressure. The residue was purified by column chromatography (SiO₂, ethyl acetate/cyclohexane, 2/8, v/v) to afford **13** (10.71 g, 30.3 mmol) as a brown oil. Yield: 97%; *R_f* (SiO₂, ethyl acetate/cyclohexane, 2/8, v/v): 0.06; IR (ATR accessory) ν 3550-3100, 2978, 1683, 1516, 1367, 1282, 1250, 1149 cm⁻¹; ¹H NMR (200.13 MHz, CDCl₃) δ 1.42 (s, 18H), 2.92 (m, 2H), 4.37 (q, 1H, *J* = 6.5 Hz), 5.03 (d, 1H, *J* = 8 Hz), 5.70 (brs, 1H), 5.89 (brs, 1H), 6.56 (m, 1H), 6.70 (s, 1H), 6.75 (d, 1H, *J* = 8 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ 28.1 (3C), 28.4 (3C), 38.1, 55.3, 80.4, 82.6, 115.3, 116.5, 121.7, 128.7, 143.1, 144.0, 155.7, 171.6.

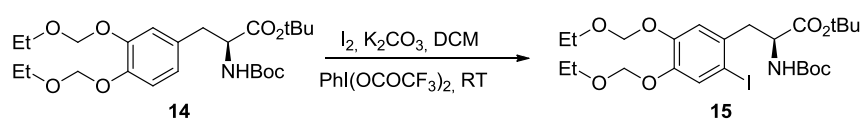
(2*S*)-*tert*-Butyl 3-(3,4-bis(ethoxymethoxy)phenyl)-2-((*tert*-butoxycarbonyl)amino)propanoate (14)



To a solution of compound **13** (10.55 g, 29.9 mmol) in anhydrous tetrahydrofuran (100 mL) was added, under argon, *N,N*-diisopropylethylamine (15.3 mL, 90.0 mmol). The mixture was stirred 10 min at room temperature and cooled to 0 °C before dropwise addition of chloromethyl ethyl ether (80%, 10.5 mL, 88.8 mmol). The flask

was sealed with a glass stopper and the solution was stirred at 40 °C for 24 h. After cooling to room temperature, the TLC monitoring (SiO₂, ethyl acetate/cyclohexane, 2/8, v/v) indicated complete conversion and methyl *tert*-butyl ether (MTBE, 200 mL) and water (100 mL) were added. After decantation, the organic layer was washed successively with deionised water (3 x 100 mL), aqueous 5% acetic acid solution (2 x 100 mL), aqueous 10% potassium carbonate solution (2 x 100 mL) and deionised water (3 x 100 mL). The organic layer was dried over magnesium sulfate, filtered and evaporated under reduced pressure to afford compound **14** (8.70 g, 18.5 mmol) as a yellow oil. Yield: 62%; IR (ATR accessory) ν 2976, 1713, 1508, 1366, 1255, 1150 cm⁻¹; R_f (SiO₂, ethyl acetate/cyclohexane, 2/8, v/v): 0.33; ¹H NMR (200.13 MHz, CDCl₃) δ 1.15 (t, 3H, *J* = 7.0 Hz), 1.16 (t, 3H, *J* = 7.0 Hz), 1.36 (s, 18H), 2.93 (d, 2H, *J* = 5.8 Hz), 3.70 (q, 4H, *J* = 7.1 Hz), 4.35 (q, 1H, *J* = 6.6 Hz), 4.96 (d, 1H, *J* = 8.1 Hz), 5.18 (s, 4H), 6.70 (dd, 1H, *J* = 8.2, 1.9 Hz), 6.92 (d, 1H, *J* = 1.9 Hz), 7.03 (d, 1H, *J* = 8.2 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ 15.1 (2C), 27.9 (3C), 28.3 (3C), 37.8, 54.8, 64.2, 64.3, 79.5, 81.8, 94.1 (2C), 116.5, 118.0, 123.3, 130.5, 146.3, 147.2, 155.1, 171.0; HRMS: *m/z* [M+Na]⁺ measured 492.2568, calculated 492.2573.

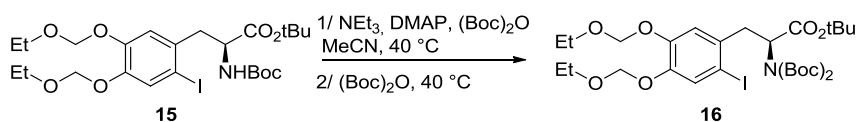
(2*S*)-*tert*-Butyl 3-(4,5-bis(ethoxymethoxy)-2-iodophenyl)-2-(*tert*-butoxycarbonyl)amino)propanoate (**15**)



A solution of compound **14** (0.81 g, 1.72 mmol) in anhydrous dichloromethane (15 mL) were successively added under argon, iodine (525 mg, 2.07 mmol), potassium carbonate (286 mg, 2.07 mmol) and *bis*(trifluoroacetoxy)phenyl- λ^3 -iodane (890 mg, 2.07 mmol). The reaction mixture was slowly warmed to room temperature and stirred for 4 h. The reaction was diluted with dichloromethane (20 mL) and washed successively with an aqueous 5% sodium bisulfite solution (2 x 30 mL), an aqueous saturated sodium bisulfite solution (2 x 30 mL) and deionised water (30 mL). The organic layer was dried over magnesium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by column chromatography (SiO₂, ethyl acetate/cyclohexane, 2/8, v/v) to give compound **15** (591 g, 0.99 mmol) as a pale yellow oil. Yield: 58%; R_f (SiO₂, ethyl acetate/cyclohexane, 2/8, v/v): 0.27; IR

(ATR accessory) ν 3373, 2977, 2932, 1713, 1491, 1366, 1250, 1148 cm^{-1} ; ^1H NMR (200.13 MHz, CDCl_3) δ 1.20 (t, 6H, $J = 7.1$ Hz), 1.37 (s, 18H), 2.90 (dd, 1H, $J = 14.0$, 8.9 Hz), 3.12 (dd, 1H, $J = 14.0$, 5.6 Hz), 3.69 (q, 4H, $J = 7$ Hz), 4.45 (q, 1H, $J = 5.9$ Hz), 5.01 (d, 1H, $J = 8.7$ Hz), 5.18 (s, 4H), 7.00 (s, 1H), 7.53 (s, 1H); ^{13}C NMR (50.32 MHz, CDCl_3) δ 15.1 (2C), 28.0 (3C), 28.3 (3C), 43.0, 54.1, 64.5 (2C), 79.5, 81.9, 91.0, 94.1 (2C), 118.3, 126.9, 133.7, 146.7, 147.5, 155.0, 171.1; HRMS: m/z $[\text{M}+\text{Na}]^+$ measured 618.1531, calculated 618.1540.

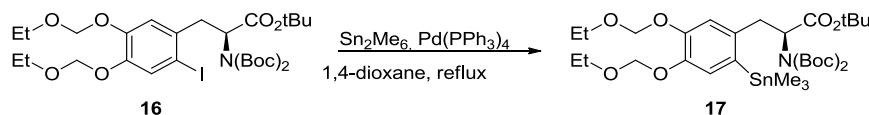
(2*S*)-*tert*-Butyl 3-(4,5-bis(ethoxymethoxy)-2-iodophenyl)-2-(di(*tert*-butoxycarbonyl))amino)propanoate (**16**)



To a solution of compound **15** (4.07 g, 6.85 mmol) in anhydrous acetonitrile (80 mL) were added, under argon, triethylamine (2.85 mL, 20.5 mmol) and 4-dimethylaminopyridine (418 mg, 3.42 mmol). To the reaction mixture was then slowly added under stirring over 1 h a solution of di-*tert*-butyl dicarbonate (2.24 g, 10.3 mmol) in anhydrous acetonitrile (20 mL). The reaction mixture was stirred at 40 °C for 24 h. As TLC monitoring (SiO_2 , ethyl acetate/cyclohexane, 1/9, v/v) indicated incomplete reaction process, the mixture was cooled to room temperature and additional di-*tert*-butyl dicarbonate (2.24 g, 10.3 mmol) was added. The reaction mixture was stirred at 40 °C for 23 h. After cooling to room temperature and addition of dichloromethane (160 mL), the resulting solution was washed with deionised water (2 x 80 mL). The organic layer was dried over magnesium sulfate, filtered and evaporated under reduced pressure. The crude product was purified by column chromatography (SiO_2 , ethyl acetate/cyclohexane, 1/9, v/v) to give compound **16** as a pale yellow oil (2.92 g, 4.20 mmol) along with recovered starting material (1.36 g, 2.90 mmol). Yield: 61%; R_f (SiO_2 , ethyl acetate/cyclohexane, 1/9, v/v): 0.13; IR (ATR accessory) ν 2978, 2932, 1735, 1698, 1492, 1367, 1249, 1136, 1105 cm^{-1} ; ^1H NMR (200.13 MHz, CDCl_3) δ 1.18 (t, 3H, $J = 7.0$ Hz), 1.20 (t, 3H, $J = 7.0$ Hz), 1.39 (s, 18H), 1.47 (s, 9H), 3.27 (dd, 1H, $J = 14.2$, 11.0 Hz), 3.50 (dd, 1H, $J = 14.2$, 4.3 Hz), 3.71 (m, 4H), 5.04 (dd, 1H, $J = 11.0$, 4.3 Hz), 5.20 (m, 4H), 6.97 (s, 1H), 7.53 (s, 1H); ^{13}C NMR (50.32 MHz, CDCl_3) δ 15.2 (2C), 28.0 (6C), 28.1 (3C), 40.0, 58.7, 64.5 (2C),

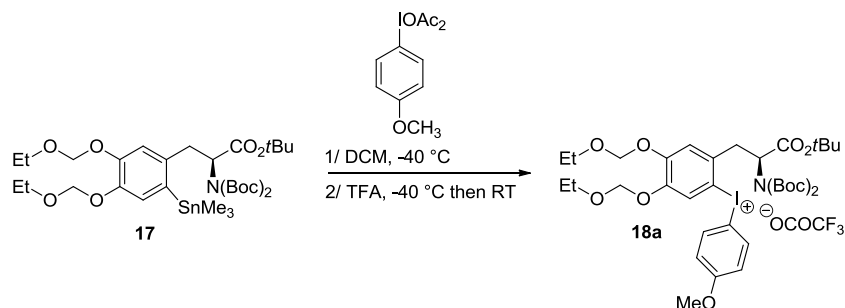
81.7, 82.7 (2C), 90.8, 94.3 (2C), 118.7, 126.6, 134.9, 146.6, 147.8, 152.0 (2C), 169.0; HRMS: m/z $[M+Na]^+$ measured 718.2059, calculated 718.2068.

(2*S*)-*tert*-Butyl 3-(4,5-bis(ethoxymethoxy)-2-trimethylstannylphenyl)-2-(di(*tert*-butoxycarbonyl))amino)propanoate (**17**)



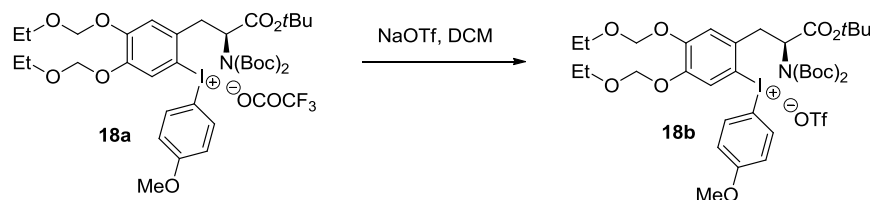
Compound **17** was obtained according to the procedure described above for **7** starting from iodinated compound **16** (1.00 g, 1.44 mmol). The residue was purified by column chromatography (SiO₂, ethyl acetate/cyclohexane, 1/9, v/v) to give compound **17** as a light yellow solid (0.80 g, 1.27 mmol). Yield: 76%; mp 78-80 °C; R_f (SiO₂, ethyl acetate/cyclohexane, 1/9, v/v): 0.16; IR (ATR accessory) ν 2977, 1744, 1699, 1368, 1245, 1136, 1105, 1008 cm⁻¹; ¹H NMR (200.13 MHz, CDCl₃) δ 0.30 (9H, ² $J_{H-117-119Sn}$ = 53.0 Hz), 1.20 (m, 6H), 1.36 (s, 18H), 1.47 (s, 9H), 3.24 (m, 2H), 3.70 (m, 4H), 4.81 (q, 1H, J = 5.7, 9.2 Hz), 5.20 (m, 3H), 5.27 (d, 1H, J = 6.7 Hz), 6.94 (s, 1H, ⁴ $J_{H-117-119Sn}$ = 17.8 Hz), 7.21 (1H, ³ $J_{H-117-119Sn}$ = 51.2 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ -8.3 (3C, ¹ $J_{C-119Sn}$ = 349 Hz, ¹ $J_{C-117Sn}$ = 333 Hz), 15.1 (2C), 27.9 (6C), 28.0 (3C), 37.8 (1C, ³ $J_{C-117-119Sn}$ = 25.4 Hz), 60.9, 64.0, 64.3, 81.6, 82.6 (2C), 94.0, 94.6, 117.8 (1C, ² $J_{C-117-119Sn}$ = 45.7 Hz), 124.8 (1C, ³ $J_{C-117-119Sn}$ = 43.4 Hz), 134.8, 139.5 (1C, ³ $J_{C-117-119Sn}$ = 32 Hz), 145.4, 148.0, 152 (2C), 169.0; HRMS: m/z $[M+H]^+$ measured 734.2938, calculated 734.2926.

((2*S*)-*tert*-Butyl 3-(4,5-*bis*(ethoxymethoxy)-2-iodophenyl)-2-(di(*tert*-butoxycarbonyl)amino)propanoate)(4-methoxyphenyl)iodonium trifluoroacetate (18a)



Compound **18a** (434 mg, 0.47 mmol) was obtained as a brown solid according to the procedure described above for **6a** starting from **17** (518 mg, 0.71 mmol). Yield: 67%; mp 54-56 °C; R_f (SiO₂, dichloromethane/ethanol, 95/5, v/v): 0.38; IR (ATR accessory) ν 2979, 1740, 1662, 1253, 1132 cm⁻¹; ¹H NMR (200.13 MHz, CDCl₃) δ 1.10 (t, 3H, J = 7.0 Hz), 1.20 (t, 3H, J = 7.1 Hz), 1.43 (s, 18H), 1.48 (s, 9H), 3.32 (dd, 1H, J = 8.5, 14.7 Hz), 3.50-3.80 (m, 5H), 3.82 (s, 3H), 5.02 (dd, 1H, J = 6.7, 8.3 Hz), 5.15 (s, 2H), 5.25 (s, 2H), 6.87 (d, 2H, J = 9.0 Hz), 7.19 (s, 1H), 7.60 (s, 1H), 7.92 (d, 2H, J = 9.0 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ 15.1 (2C), 28.1 (9C), 38.7, 55.7, 59.1, 64.8, 65.1, 83.0, 83.9 (2C), 94.1, 94.3, 106.4, 111.3, 117.5 (2C), 118.8, 123.6, 135.1, 136.5 (2C), 147.8, 150.4, 152.5 (2C), 162.3, 168.7 (two carbons missing); ¹⁹F (470.6 MHz, CDCl₃) δ -76.3 ppm; HRMS: m/z [M-CF₃CO₂]⁺ measured 802.2675, calculated 802.2658.

((2*S*)-*tert*-Butyl 3-(4,5-*bis*(ethoxymethoxy)-2-iodophenyl)-2-(di(*tert*-butoxycarbonyl)amino)propanoate)(4-methoxyphenyl)iodonium trifluoromethanesulfonate (**18b**)



A solution of compound **18a** (365 mg, 0.33 mmol) in dichloromethane (7 mL) was washed with an aqueous solution of sodium trifluoromethane sulfonate (1 M, 14 mL). The aqueous layer was extracted with dichloromethane (2 x 7 mL). The organic layers were combined, and concentrated under reduced pressure. These washing steps were reproduced five time, before purification of the residue by column chromatography (SiO₂, dichloromethane/ethanol, 95/5, v/v). The pure compound **18b**, obtained as an off-white solid, was carefully dried under vacuum (266 mg, 0.28 mmol) and aliquots of 11-12 mg were immediately prepared in sealed tubes in a closed box conditioned under inert gaseous atmosphere. Yield: 85%; R_f (SiO₂, dichloromethane/ethanol, 95/5, v/v): 0.37; IR (ATR accessory) ν 2979, 1731, 1694, 1369, 1246, 1137, 1110 cm⁻¹; ¹H NMR (200.13 MHz, CDCl₃) δ 1.06 (t, 3H, *J* = 7.0 Hz), 1.20 (t, 3H, *J* = 7.1 Hz), 1.47 (s, 27H), 3.30 (m, 1H), 3.5-3.8 (m, 5H), 3.83 (s, 3H), 4.95 (m, 1H), 5.18 (m, 2H), 5.26 (s, 2H), 6.93 (d, 2H, *J* = 9.1 Hz), 7.23 (s, 1H), 7.54 (s, 1H), 7.92 (d, 2H, *J* = 9.1 Hz); ¹³C NMR (50.32 MHz, CDCl₃) δ 15.0 (2C), 28.0 (3C), 28.1 (6C), 39.4, 55.8, 59.1, 64.8, 65.1, 83.4, 84.0 (2C), 94.3, 94.4, 103.1, 109.1, 118.0 (2C), 118.6, 122.8, 135.1, 137.3 (2C), 148.1, 150.9, 152.3 (2C), 162.8, 169.2 (one carbon missing); ¹⁹F (470.6 MHz, CDCl₃) δ -78.3 ppm; HRMS: *m/z* [M-OTf]⁺ measured 802.2672, calculated 802.2658.

Figure S1: Comparison of ^1H NMR spectra of the eluate (CD_3OD , enlarged view from 6 to 9 ppm) obtained after elution of a QMA-carbonate cartridge with a methanolic solution of iodonium **6b** (before (B) and after evaporation (C)) and reference spectra of **6b** (A).

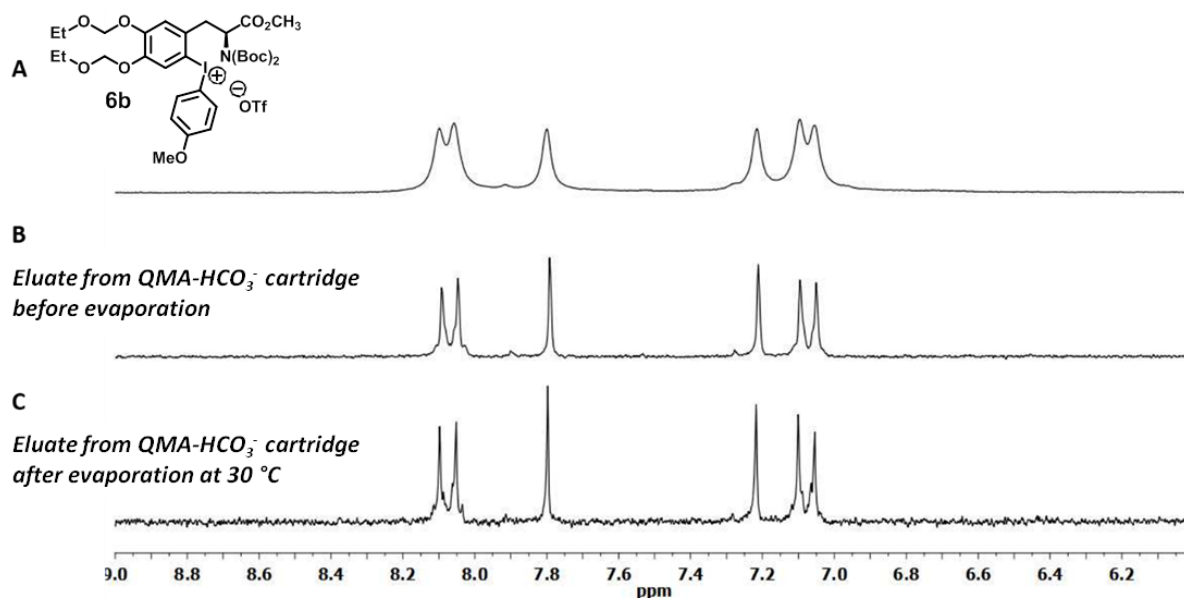


Figure S2: Percentages (%) of counterion exchange after elution of **6a** through a QMA-carbonate cartridge evaluated by ^{19}F NMR (CD_3OD , trifluorotoluene as internal reference (1%, v/v in CDCl_3)).

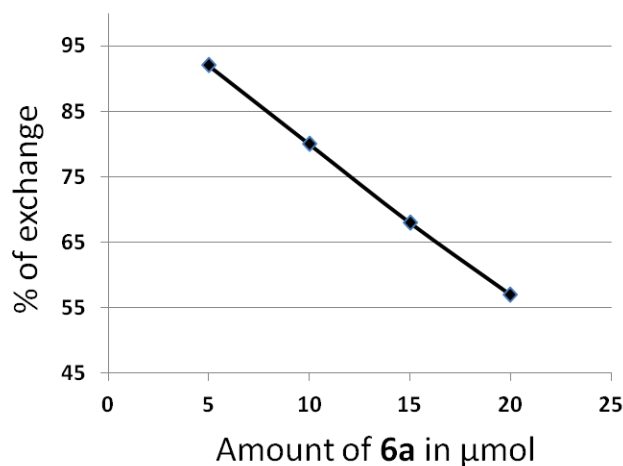


Figure S3: ^1H NMR spectra of compound **8** and eluates in CD_3OD obtained after elution of **8** (5-20 μmol) through a QMA-carbonate cartridge.

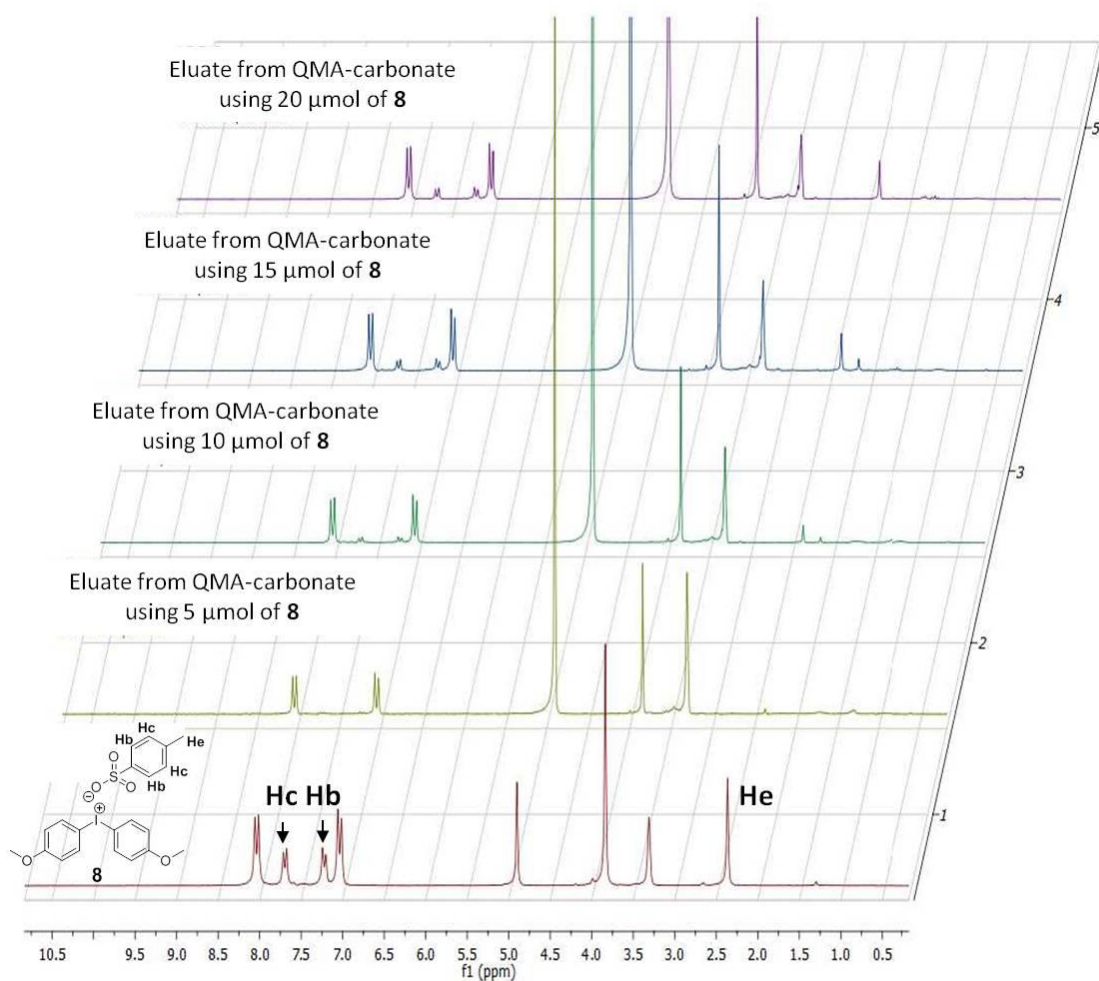
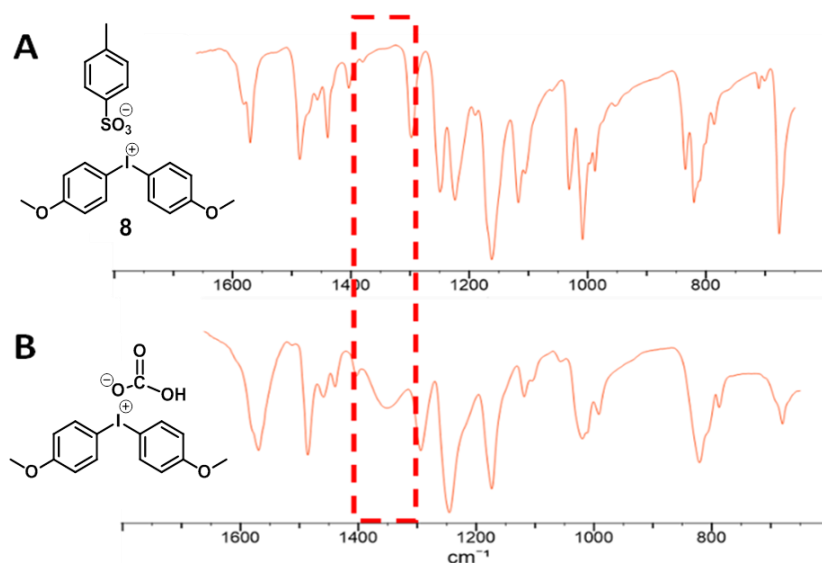
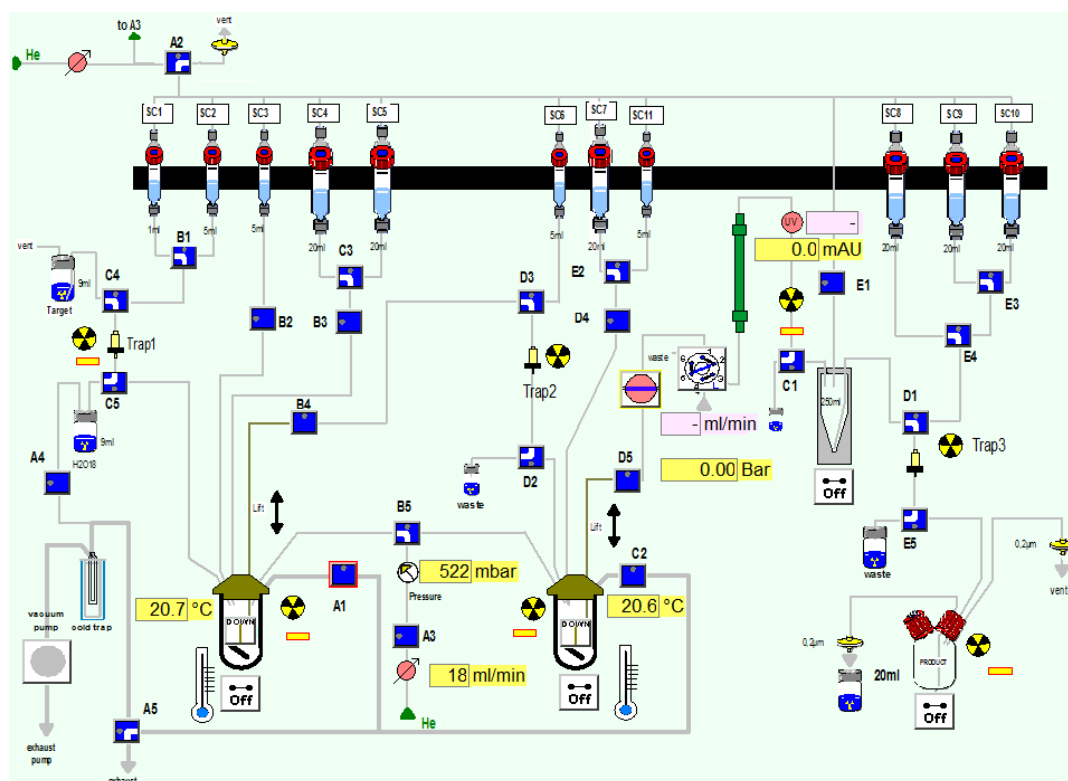


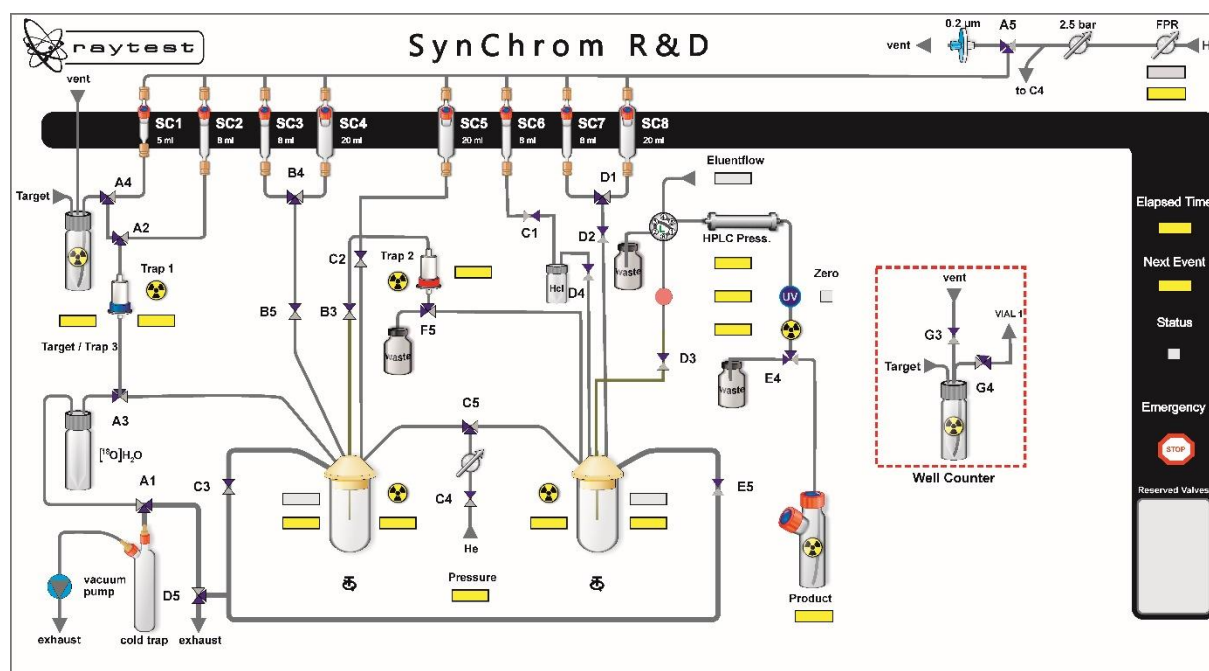
Figure S4: IR spectra (enlarged view from 600 to 1800 cm^{-1}) of iodonium **8** (A) and eluate obtained after elution of **8** (5 μmol) through a QMA-carbonate cartridge (B).



Radiochemistry



Scheme S1: Synchrom R&D Evo II Layout for the production of [^{18}F]FDOPA from precursor **6b**.



Scheme S2: Synchrom R&D Evo III Layout for the production of [^{18}F]FDOPA from precursor **18b** (only solvent containers and valves in use are represented).

Figure S5: Typical quality control of final L-[¹⁸F]FDOPA obtained from **18b** via analytical RP-HPLC equipped with a Synchronis column (250 x 4.6 mm; 5 µm; Thermo scientific, France, water/acetonitrile (9/1, v/v) as isocratic eluent mixture at a flow rate of 0.7 mL/min).

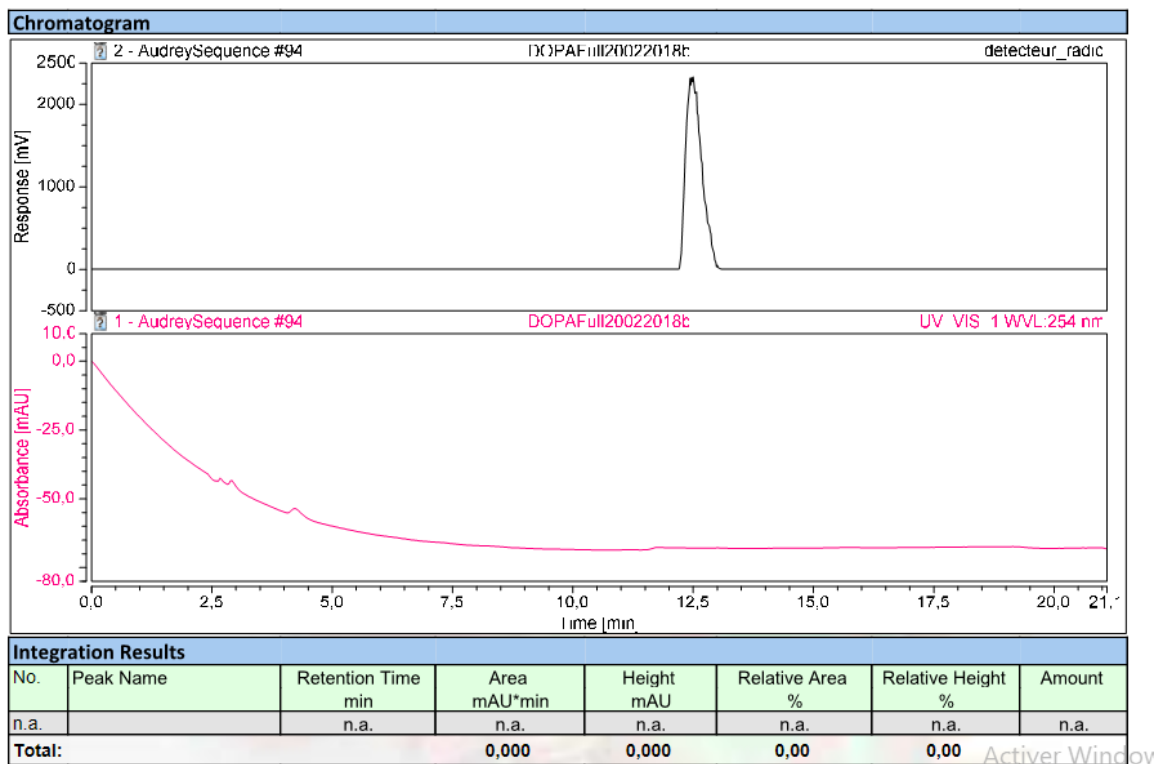
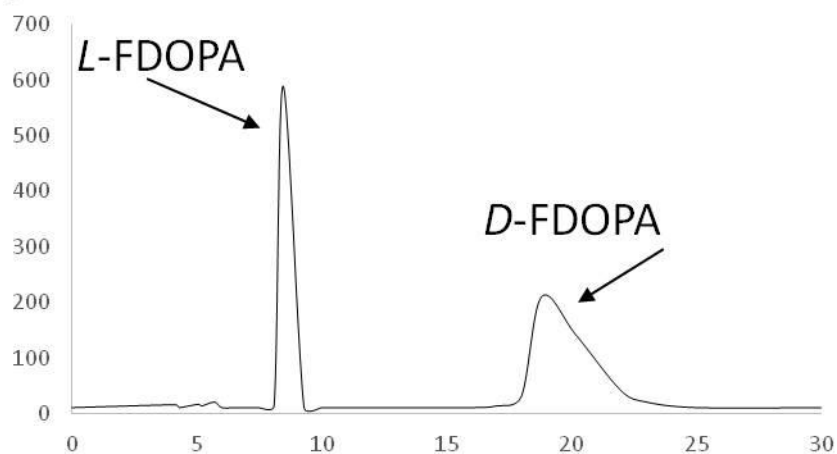
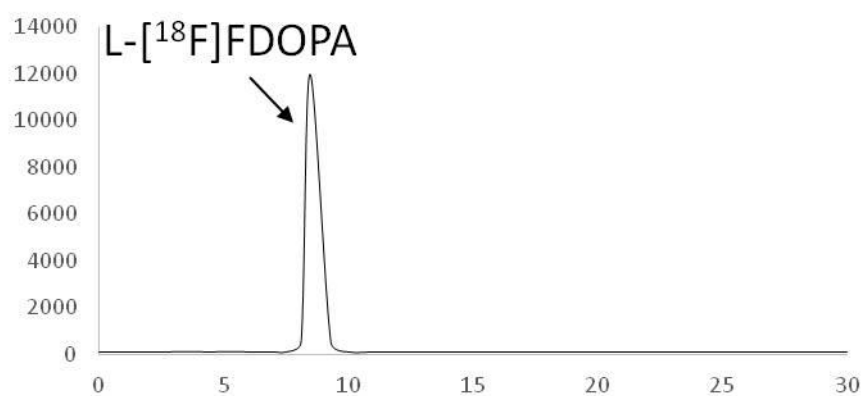


Figure S6: Control of the e.e. of L-[^{18}F]FDOPA via analytical HPLC, co-injection of a mixture of non-radioactive L-FDOPA/D-LDOPA and final L-[^{18}F]FDOPA (Reprosil Chiral-AA 8 μm column (250 x 4.6 mm; 8 μm ; CIL Cluzeau; France); water/acetonitrile (9/1, v/v) as isocratic eluent mixture; flow rate: 0.7 mL/min).

A) UV detection channel

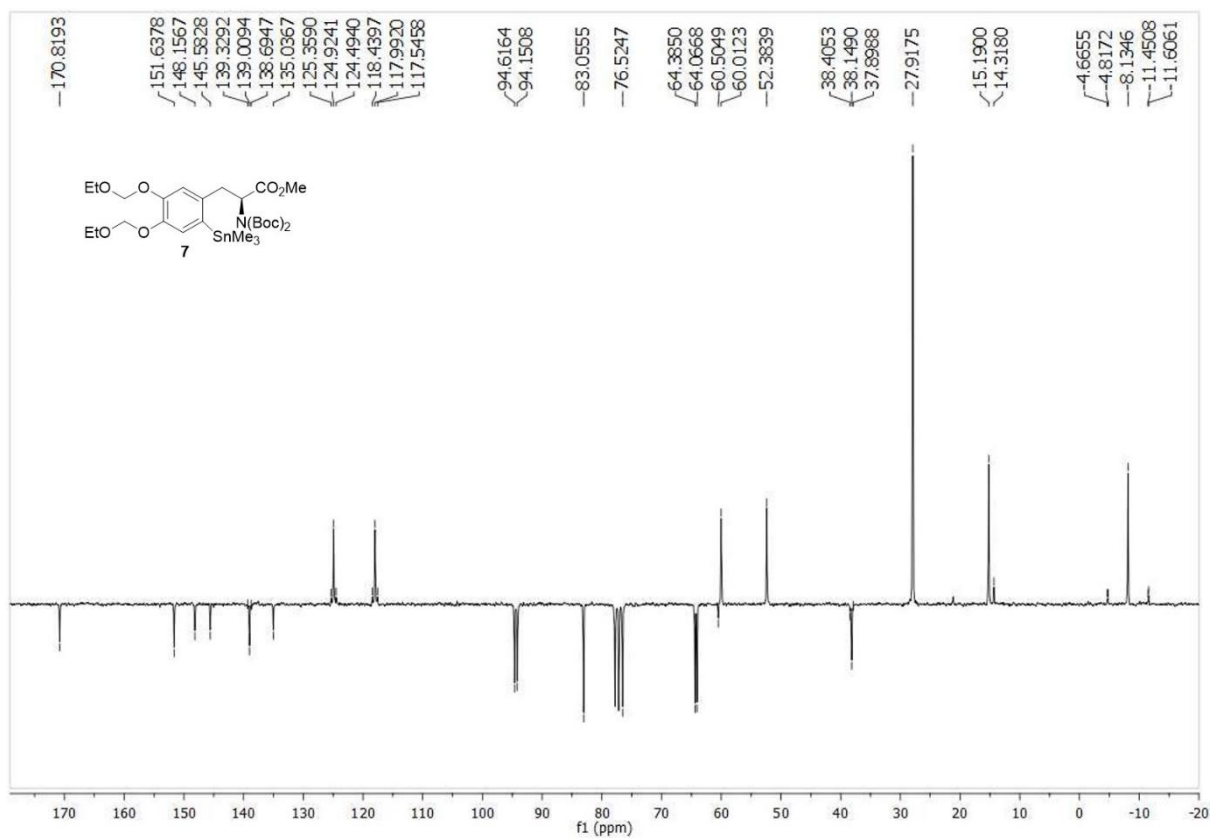


B) Radioactivity detection channel



¹H (top) and ¹³C (down) NMR spectra of compound **7** in CDCl₃



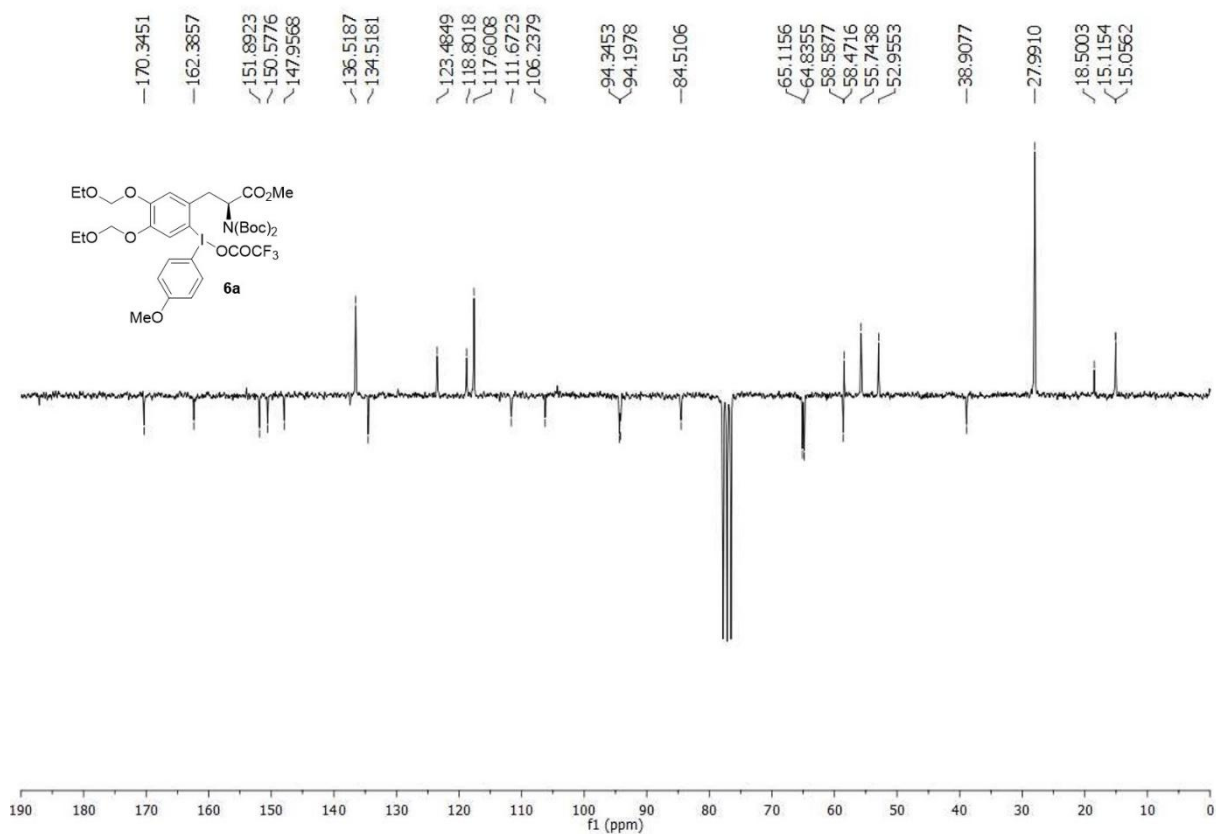


CCOC(=O)[C@H](CN(C(=O)OC(F)(F)F)C(=O)OC(F)(F)F)c1cc(OC)c2ccccc12

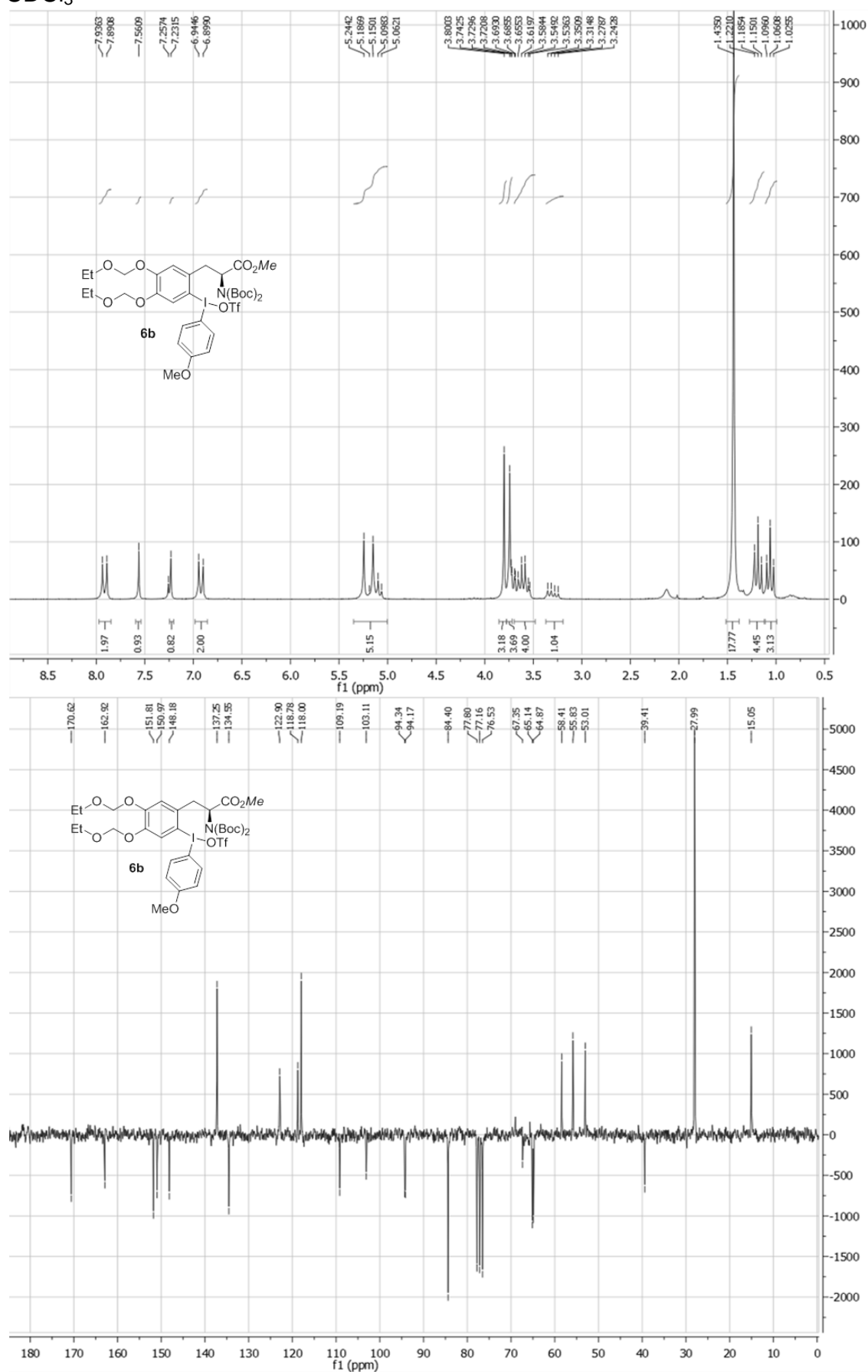
6a

Chemical shift (ppm): 7.9270, 7.8835, 7.5945, 7.2600, 7.2003, 6.9109, 6.8673, 5.2491, 5.1533, 3.8025, 3.7627, 3.7304, 3.6948, 3.6755, 3.6412, 3.6050, 3.5702, 3.3703, 3.3291, 3.2965, 3.2545, 1.4257, 1.2623, 1.2290, 1.1970, 1.1267, 1.0921, 1.0569.

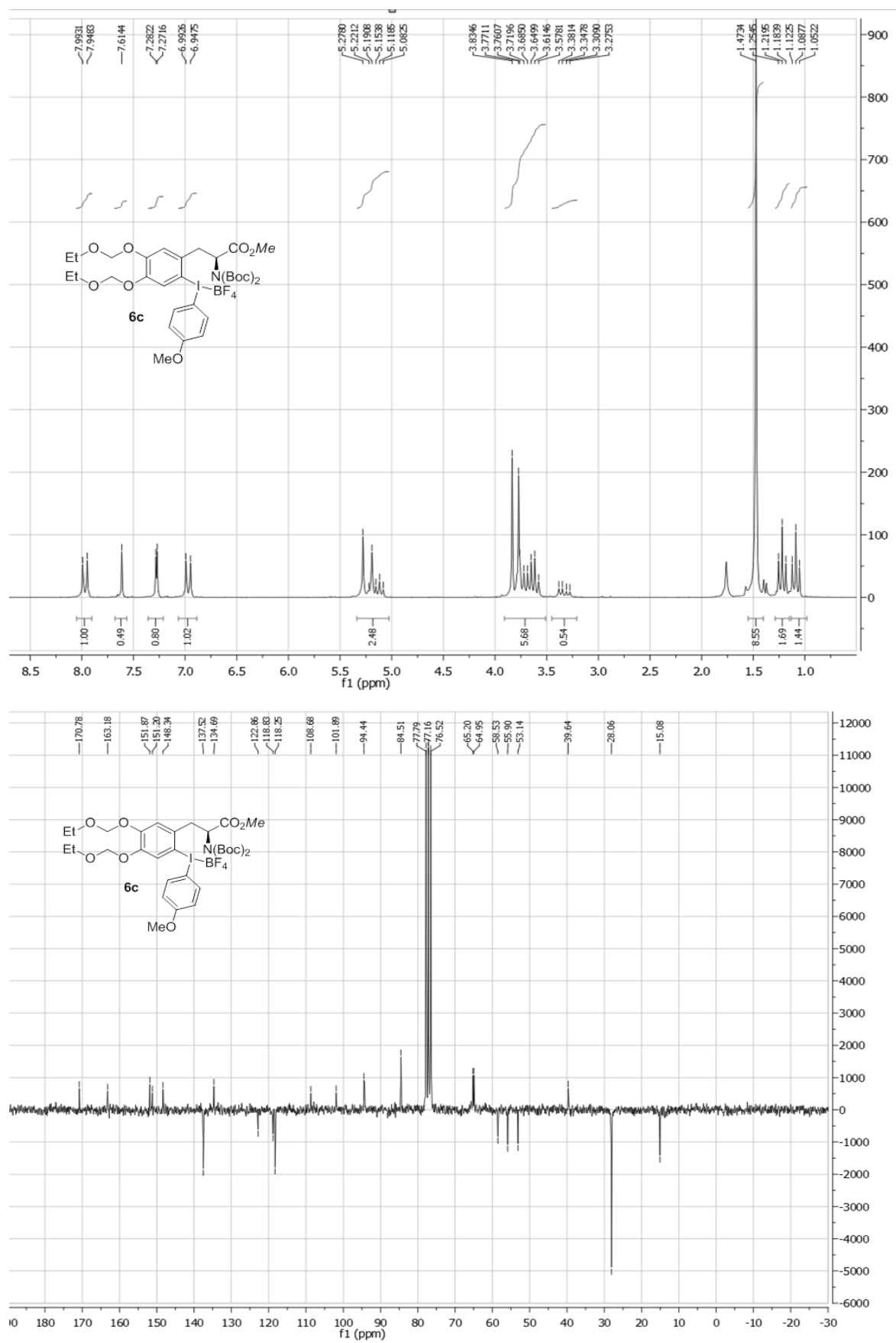
Integration values: 2.00, 0.99, 0.89, 2.07, 2.13, 2.79, 3.26, 2.87, 6.47, 1.21, 18.95, 6.07, 3.24.



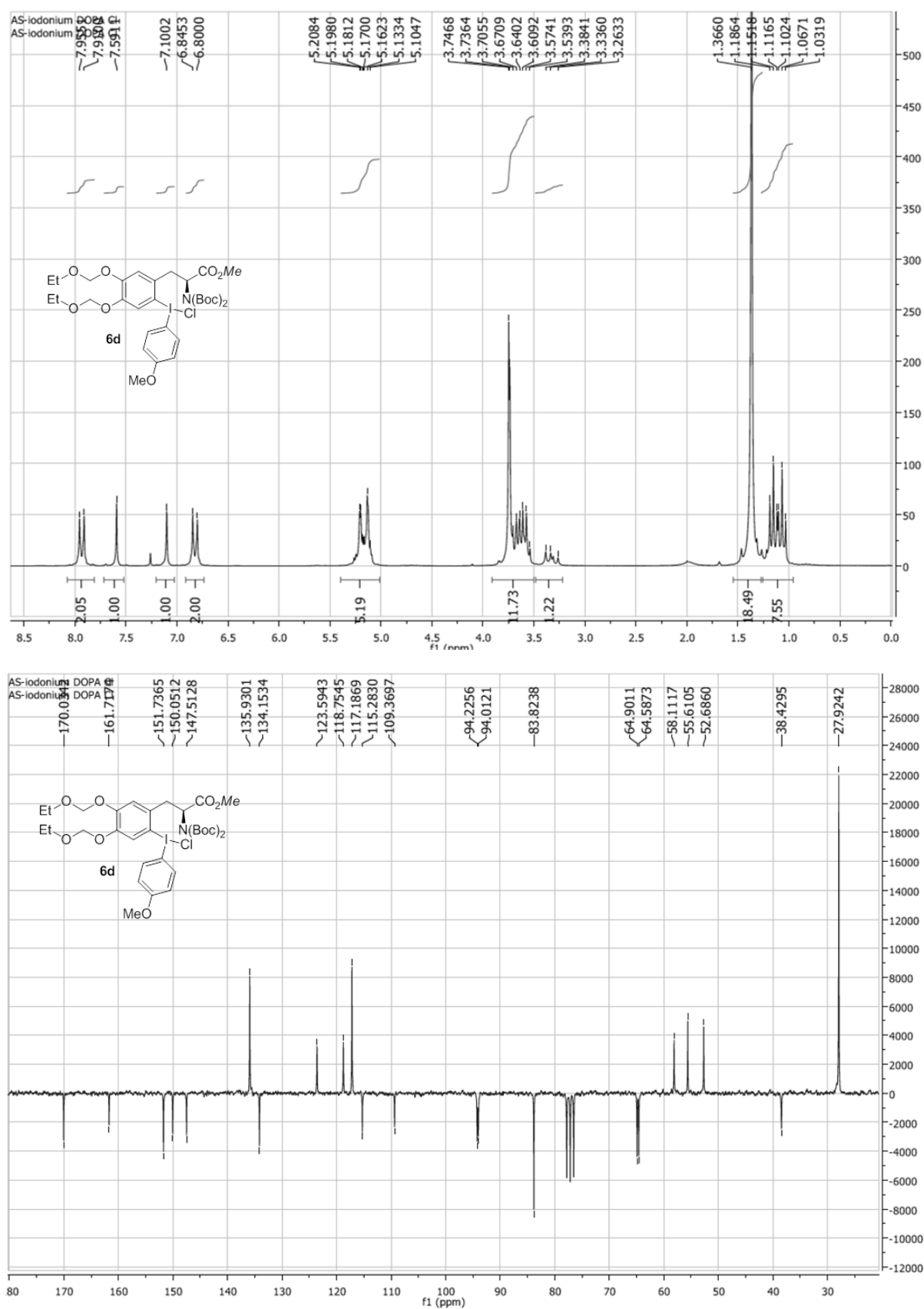
^1H (top) and ^{13}C (down) NMR spectra of compound **6b** (prepared via method B) in CDCl_3



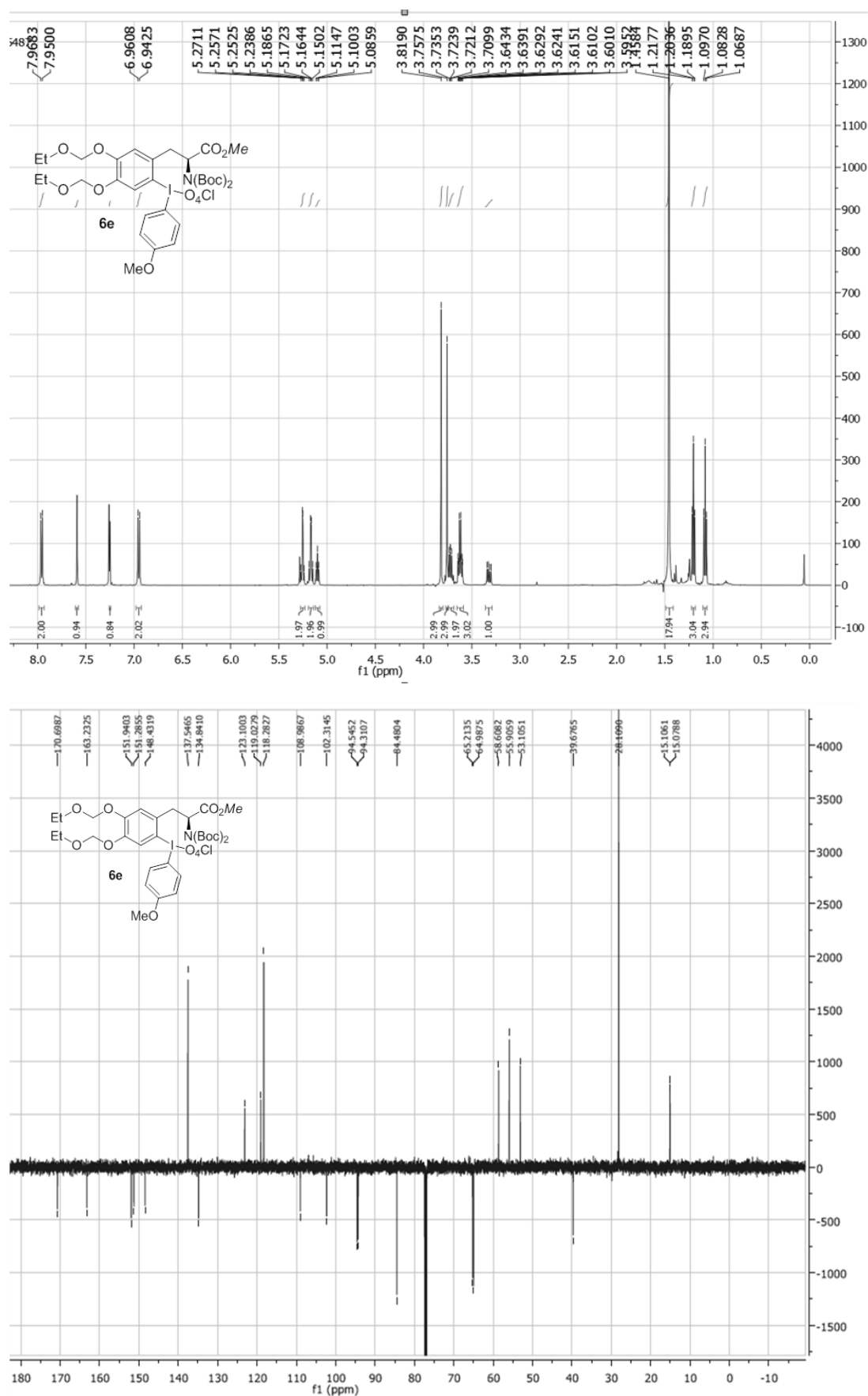
^1H (top) and ^{13}C (down) NMR spectra of compound **6c** in CDCl_3



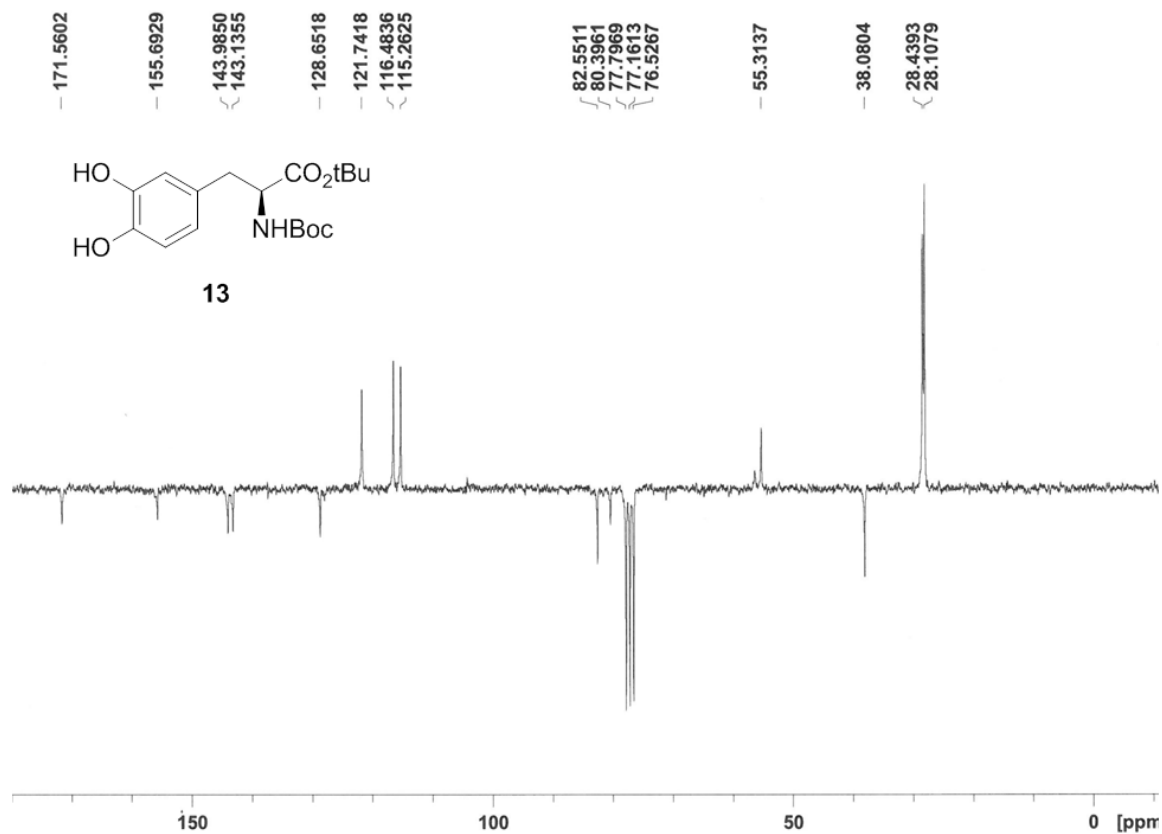
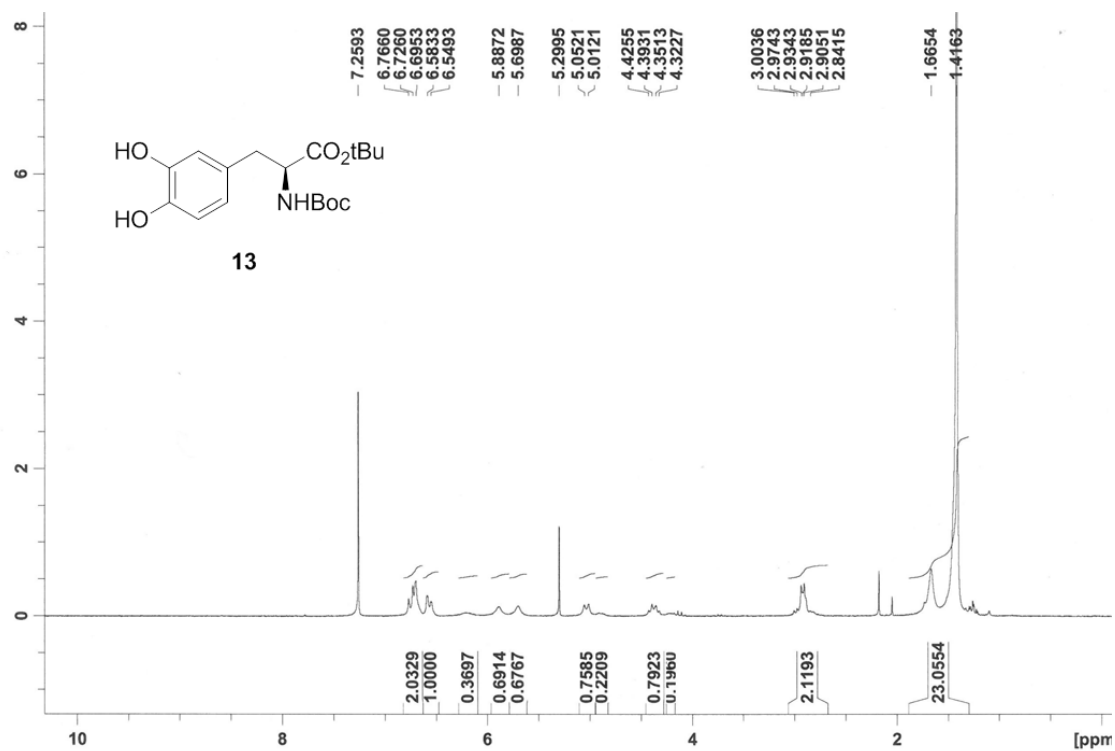
^1H (top) and ^{13}C (down) NMR spectra of compound **6d** in CDCl_3



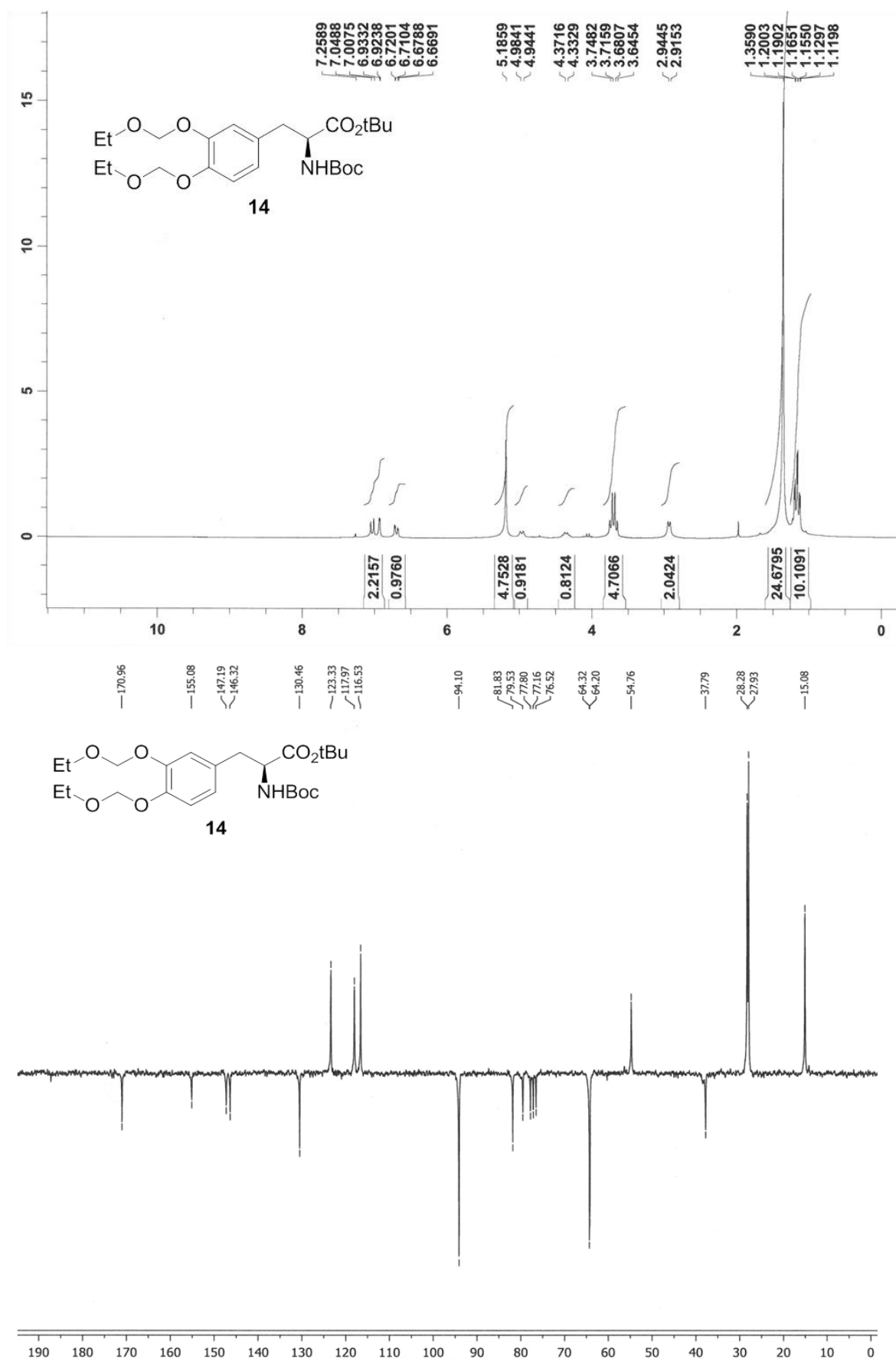
^1H (top) and ^{13}C (down) NMR spectra of compound **6e** in CDCl_3



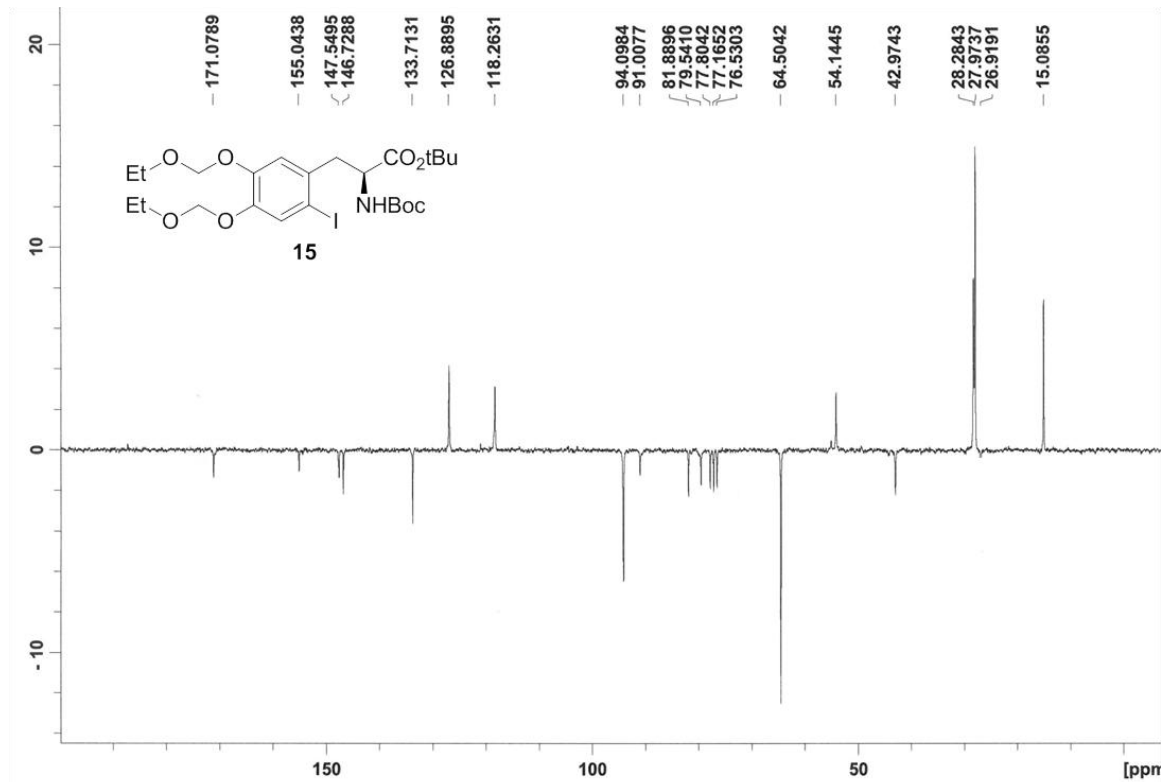
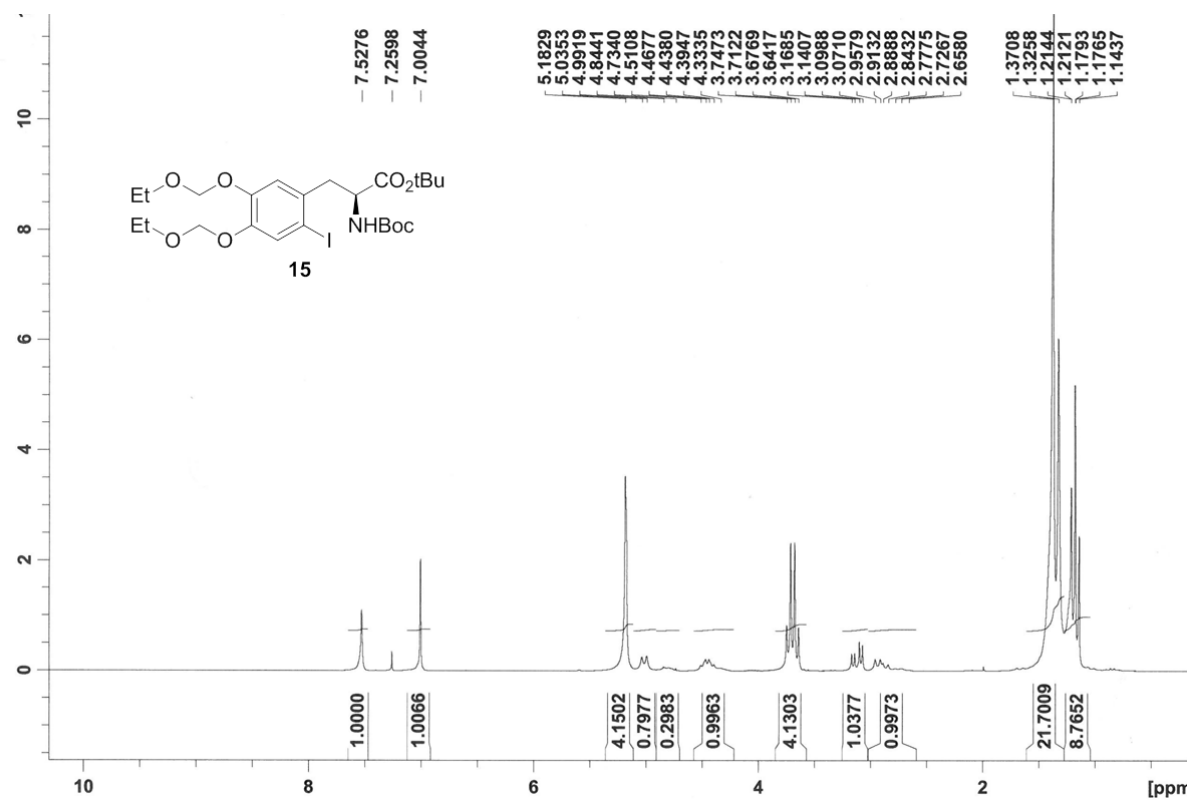
^1H (top) and ^{13}C (down) NMR spectra of compound **13** in CDCl_3



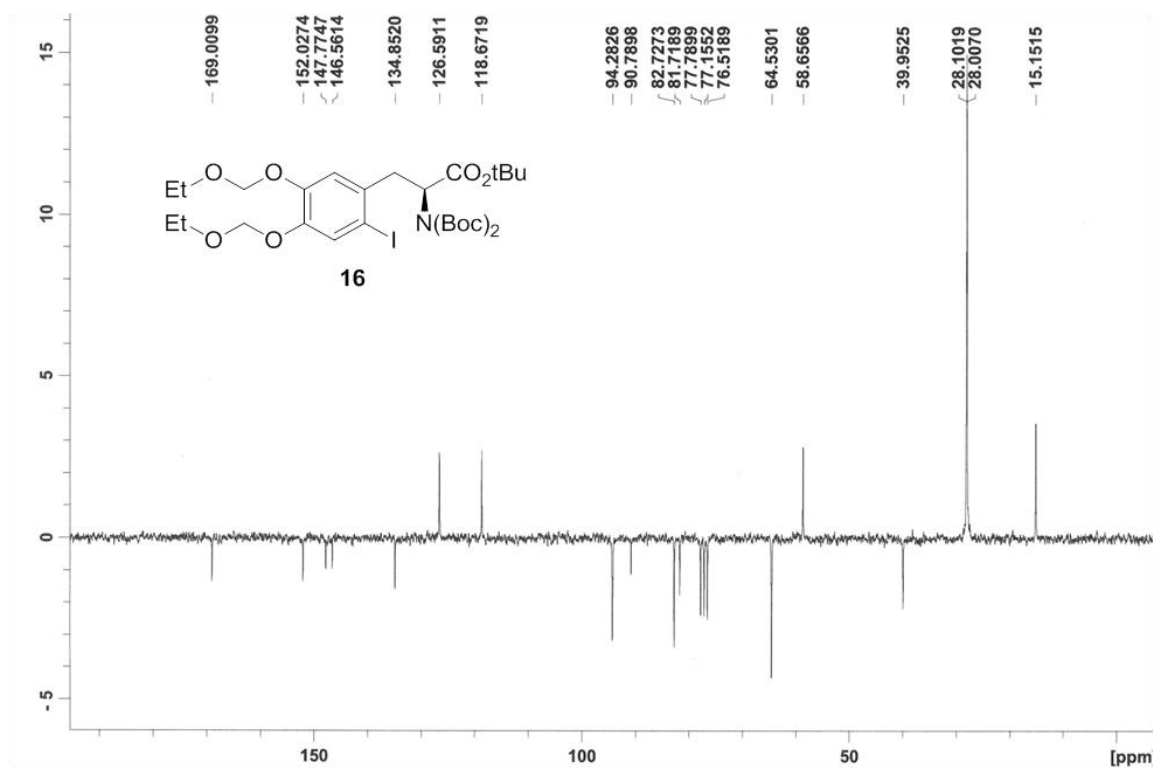
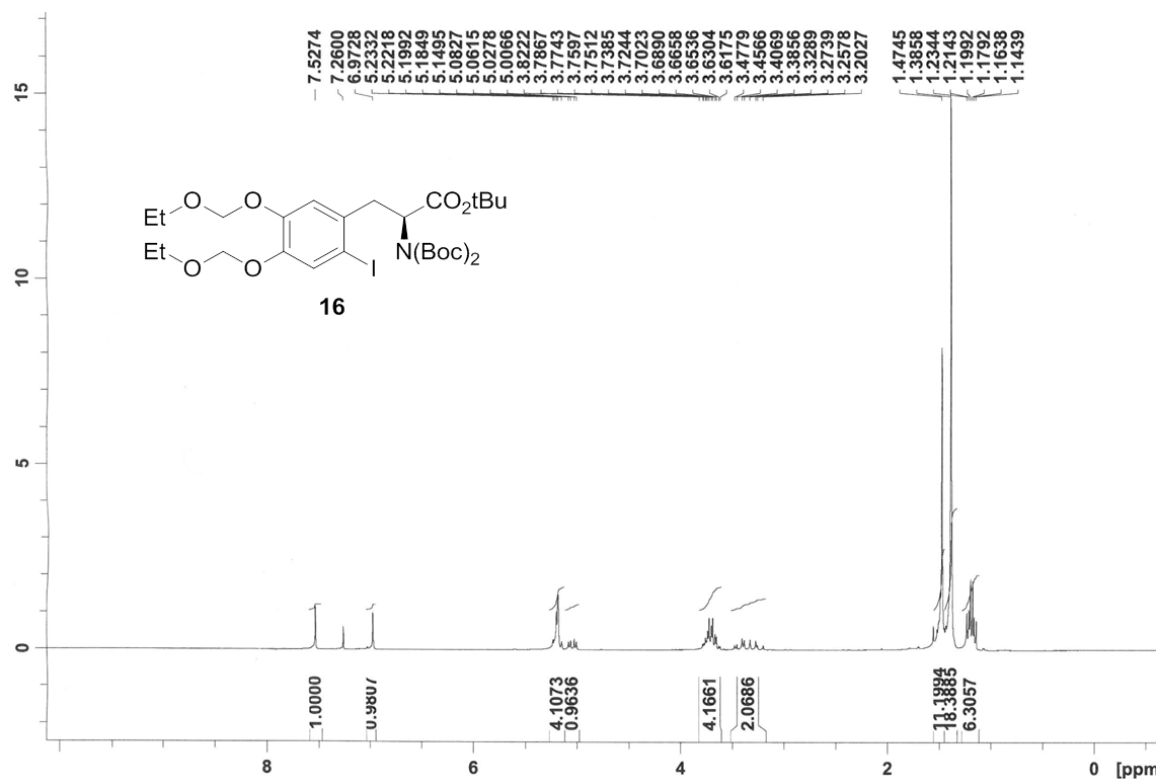
^1H (top) and ^{13}C (down) NMR spectra of compound **14** in CDCl_3



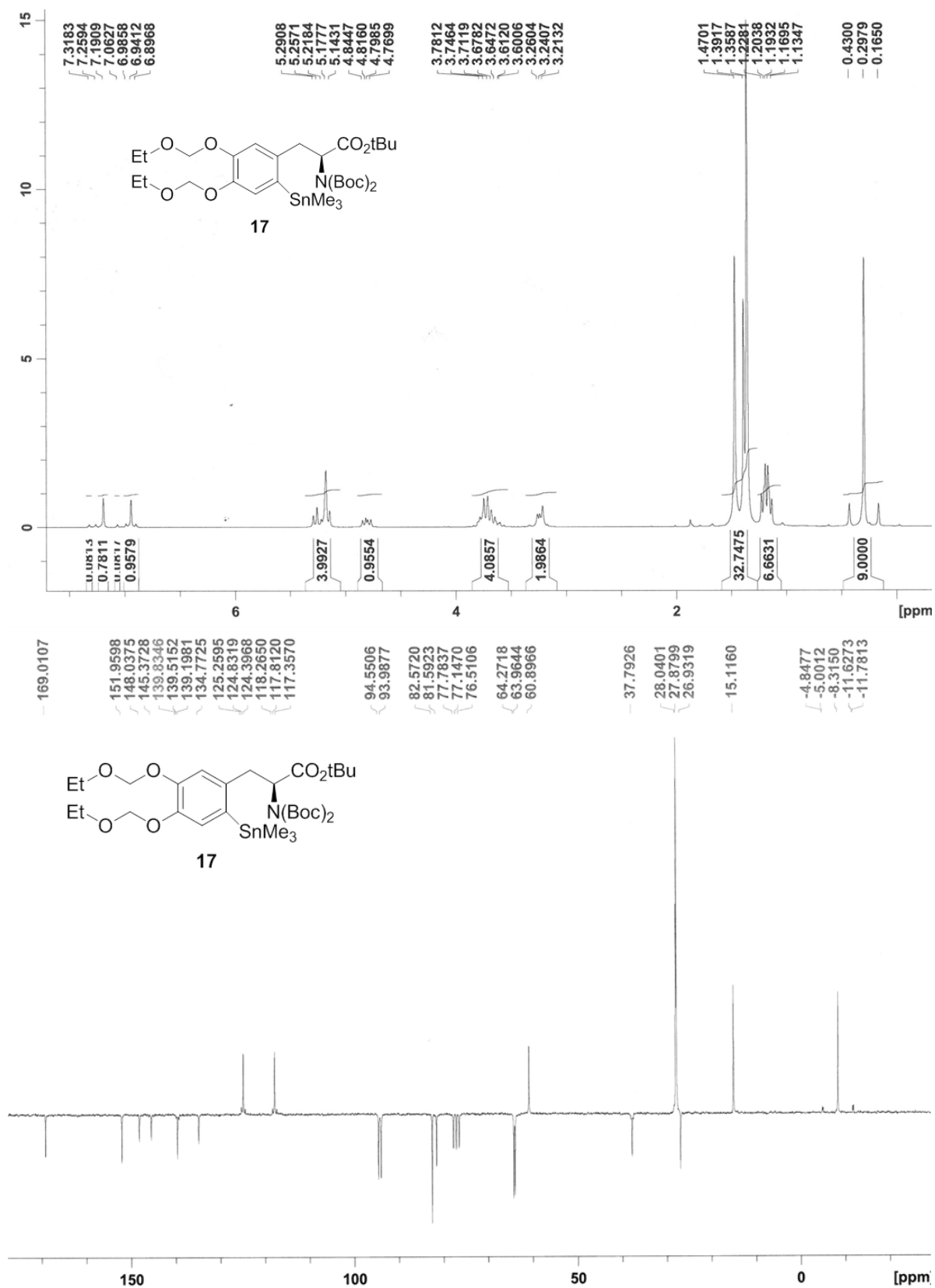
^1H (top) and ^{13}C (down) NMR spectra of compound **15** in CDCl_3



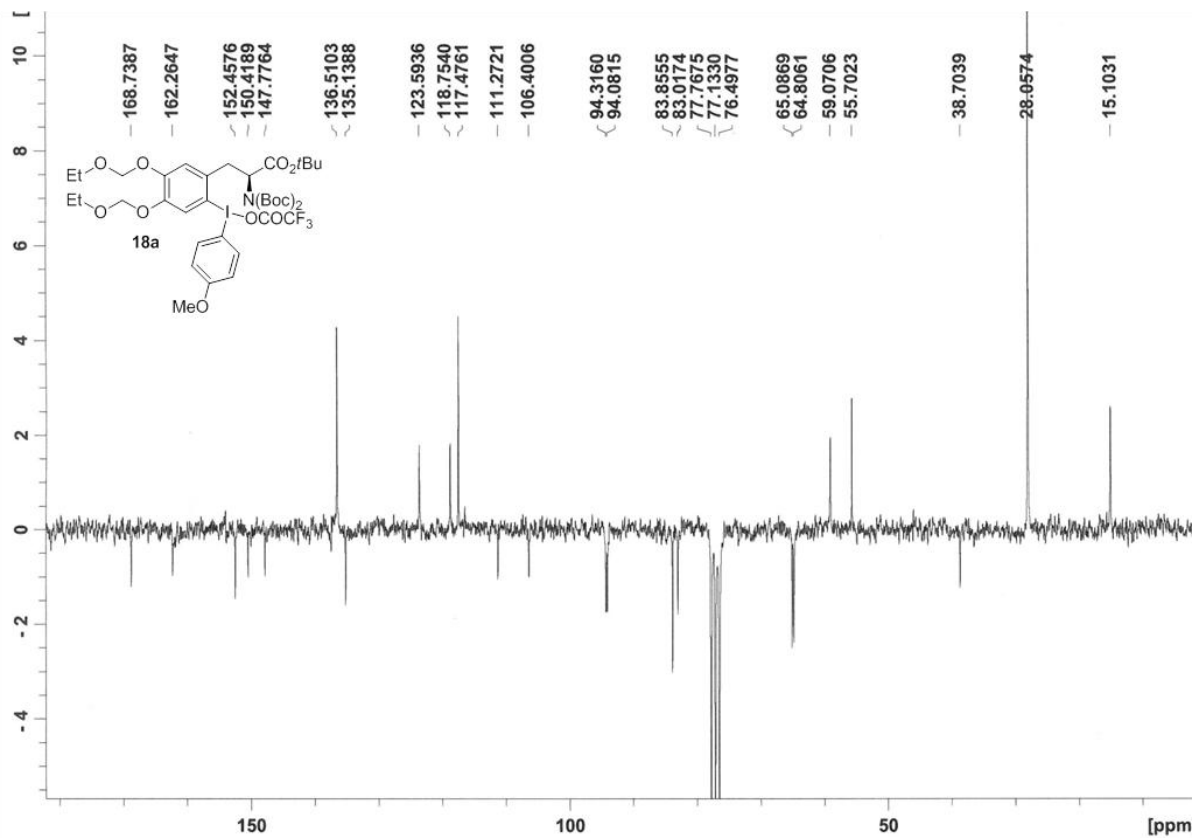
^1H (top) and ^{13}C (down) NMR spectra of compound **16** in CDCl_3



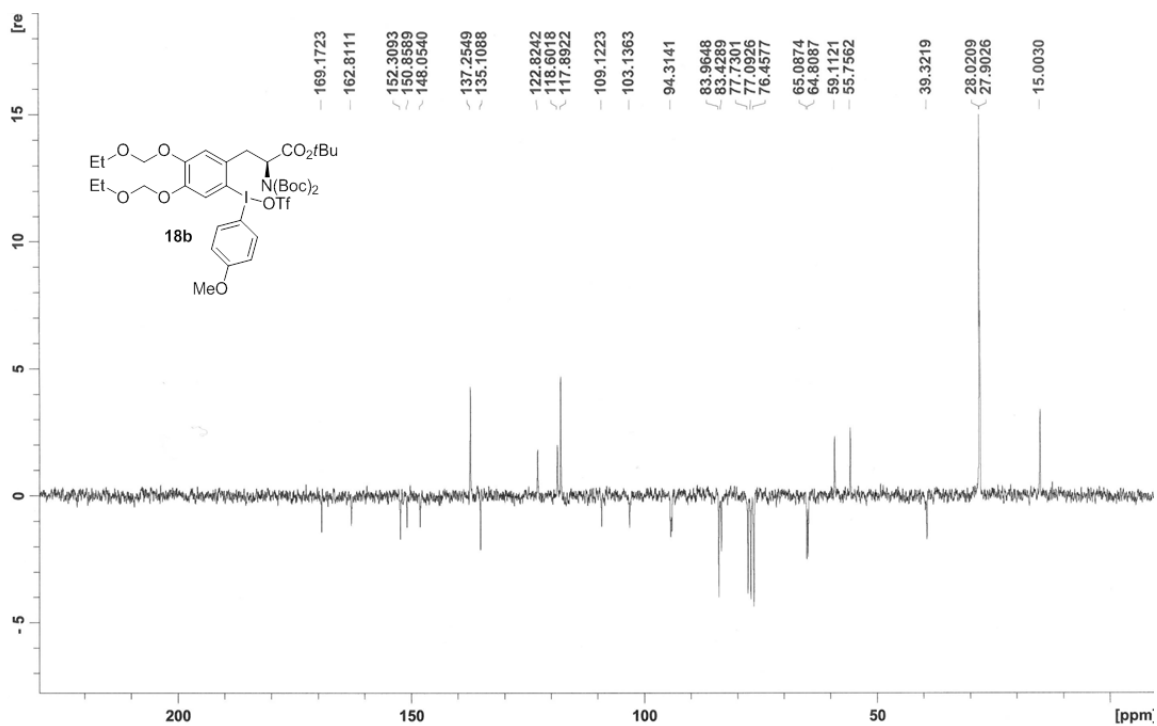
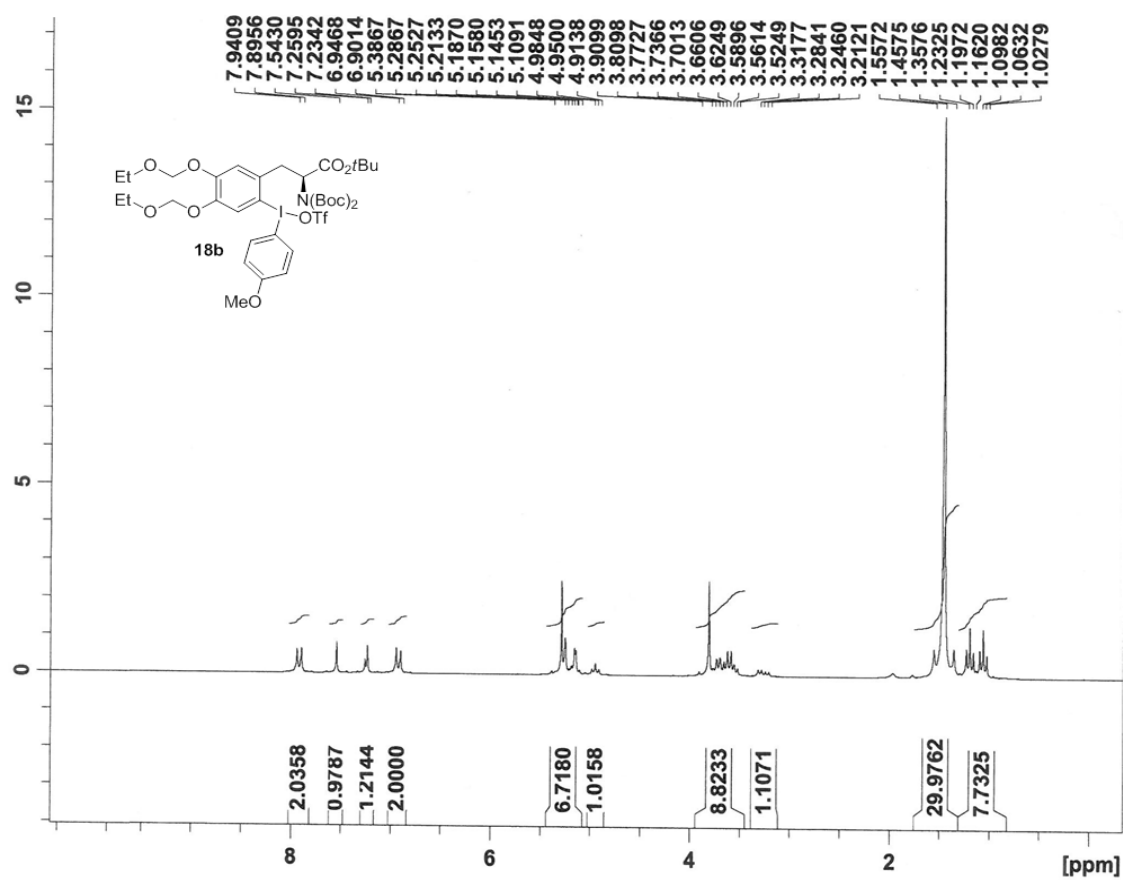
^1H (top) and ^{13}C (down) NMR spectra of compound **17** in CDCl_3



¹H (top) and ¹³C (down) NMR spectra of compound **18a** in CDCl₃



^1H (top) and ^{13}C (down) NMR spectra of compound **18b** in CDCl_3



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