Supporting Information

Novel, Orally Bioavailable γ-Aminoamide CCR2 Antagonists

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1) EXPERIMENTALS: BIOLOGICAL ASSAYS

a) human CHO cell binding assay:

Radioligand Competition Binding Assay: CHO cells expressing human CCR2b (5 X 10^4) were incubated with ^{125}I-hMCP-1 (20-50 pM) and various concentrations of unlabeled chemokines in binding buffer for 60 minutes at room temperature. The binding buffer contains 50 mM HEPES, 5 mM MgCl2, and 1 mM CaCl2, pH 7.4. 125I-hMCP-1 was purchased from Perkin Elmer Life Sciences, Inc., with a specific activity of 2200 Ci/mmole. The assay was terminated by filtration of the reaction mixture through GF/B filter plates (presoaked in 0.1% polyethyleneimine) using a Packard Cell Harvester. The filter plates were washed with 25 mM HEPES, pH 7.5, containing 500 mM NaCl and dried in an incubator for @ 37 °C for 30 min. The plates were loaded with Microscint 0 (Packard) and counted in a Topcount NXT (Packard). The software program Prism (GraphPad) was used for all calculations. Standard deviations are provided where 3 or more determinations were performed. Otherwise, data represents one determination or an average of two determinations.

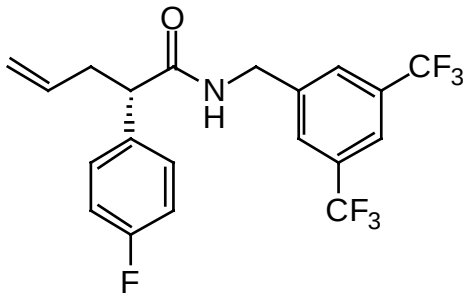
b) human monocyte chemotaxis functional assay:

Chemotaxis Assay: Assays were performed in 96 well disposable chemotaxis plates (ChemoTx, NeuroProbe, Inc.) with a 5 μm pore size (5.7 mm diameter). Monocytes (1x107cells/ml) were incubated with 2 μM Calcein-AM (Molecular Probes) in Hanks Balanced Salt Solution containing 0.01% BSA at 37°C for 30 minutes. The dye-loaded cells were washed and resuspended at 6 x 106 cells/ml in RPMI 1640 (lacking phenol red) containing 0.01% BSA. Assay was performed with 1.5 x 105cells/well. Known CCR2 antagonist 1-(3,4-dichlorobenzyl)-5-hydroxy-1H-indole-2-carboxylic acid was

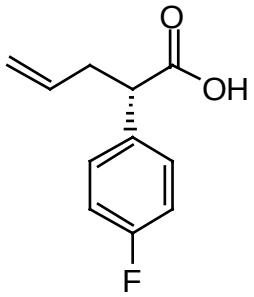
calculated to have an IC_{50} of 95 nM in this assay, in good agreement with the reported value of 60 nM (Faull, A. W.; Kettle, J. G. WO 2000046196, 2000).

2) EXPERIMENTALS: CHEMISTRY

INTERMEDIATE (*S*)-**6**



Step A:



To a mechanically stirred solution of 4-fluorophenylacetic acid (50.0 g, 0.324 mol) in 800 mL THF at about -15 °C (ice salt bath) was added dropwise LHMDS in THF (1.0 M, 811 mL, 0.811 mol) over 2.25 h. Initially during the addition, the mixture was a slurry, then at the end the mixture cleared. After an additional 0.5 h, allyl bromide (30.9 mL, 43.2 g, 0.357 mol) was added neat, dropwise over 3 minutes. The reaction mixture was stirred for 15 minutes, then warmed to rt, stirred another 0.5 h and quenched by pouring into 1N HCl solution (1L). The resulting mixture was extracted three times with ethyl acetate (400 mL). The combined organic layers were washed with brine (800 mL), dried over anhydrous $MgSO_4$, filtered, and concentrated to afford 63 g of crude product.

To the crude acid in ethyl acetate (~1L) was added (S)-(-)-α-methylbenzylamine (23.6 g, 0.194 mol). The mixture was warmed to ~60 °C until most of the solids had dissolved (more ethyl acetate was added), then cooled to rt while stirring. The solids were collected by filtration and recrytallized twice from hot ethyl

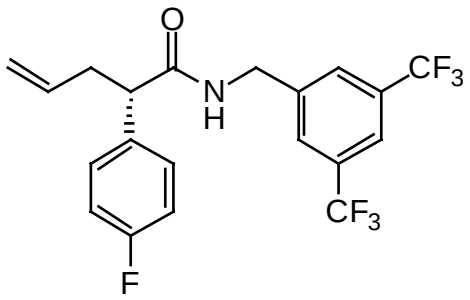
acetate to give 23.2 g of salt. The free acid was obtained by partitioning between 1N HCl and ethyl acetate. The organic phase was washed again with 1N HCl, then with brine, dried over anhydrous $MgSO_4$, and concentrated to give 15.5 g of acid (49% yield) as a clear oil which solidified on standing.

H NMR ($CDCl_3$, 400 MHz): δ 7.26 (m, 2H), 7.00 (m, 2H), 5.68 (m, 1H), 4.98-5.08 (m, 2H), 3.61 (t, J = 7.6 Hz, 1H), 2.78 (m, 1H), 2.49 (m, 1H).

The enantiomeric purity of the acid prepared above was determined by derivatization with L-Trp-OMe (amide formation). The methyl ester signal for the resolved acid (one singlet, 3.59 ppm)) was compared with that of the racemic acid (two singlets, 3.59 and 3.66 ppm) and determined to be >95% de, hence the acid is >95% ee. The procedure for derivatization is as follows:

4-fluorophenylpentenoic acid (21 mg, 0.11 mmol), L-Trp-OMe•HCl (41 mg, 0.16 mmol), EDC (31 mg, 0.16 mmol), HOBt (22 mg, 0.16 mmol), and DIEA (37 □L, 0.22 mmol) were combined in DCM and stirred overnight. The reaction mixture was diluted with more DCM, and washed with water, then brine. The organic layer was dried over $MgSO_4$, filtered and concentrated.

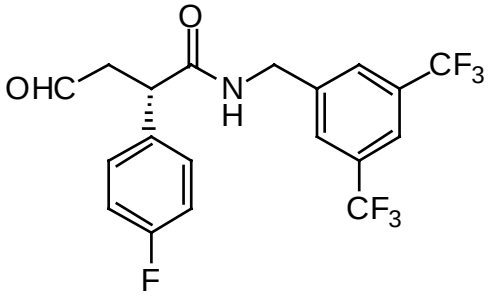
Step B:



(S)-2-(4-fluorophenyl)-pentenoic acid (4.93 g, 25.4 mmol), 3,5-Bis(trifluoromethyl) benzylamine (6.48 g, 26.7 mmol), EDC (5.85 g, 30.5 mmol) and HOBt (4.12 g, 30.5 mmol) were combined in DCM and stirred overnight. The reaction mixture was diluted with more DCM and washed twice with water and once with brine. The organic layer was dried over anhydrous $MgSO_4$, filtered, and concentrated. The crude product was purified by flash chromatography (5%MeOH/DCM) to afford 9.41 g (88%) of a white solid.

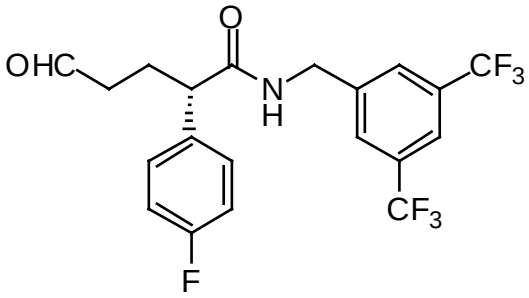
H NMR ($CDCl_3$, 500 MHz): δ 7.76 (s, 1H), 7.58 (s, 2H), 7.28 (m, 2H), 7.05 (m, 2H), 5.96 (br s, 1H), 5.74 (m, 1H), 5.02-5.11 (m, 2H), 4.53 (d, J = 6 Hz, 2H), 3.49 (t, J = 7.50 Hz, 1H), 2.92 (m, 1H), 2.52 (m, 1H).
ESI-MS calc. for C20H16F7NO: 419; Found: 420 (M+H).

INTERMEDIATE **7**

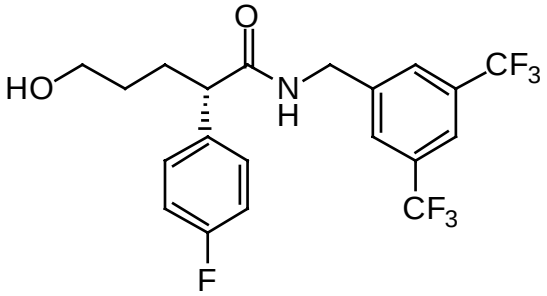


Intermediate (*S*)-**5** (5.05 g, 12.0 mmol), prepared in step B above, was dissolved in acetone (30 mL) and cooled to -78 °C. O_3 was bubbled through this solution for 15 min, at which point the solution had changed from colorless to blue. Nitrogen gas was passed through the solution until the blue color had disappeared and then dimethylsulfide (8.84 mL, 7.48 g, 120 mmol) was added and the reaction mixture allowed to warm to rt. After 1 h at rt, the reaction mixture was concentrated and the crude product was used as is in subsequent reactions. TLC and HNMR indicated that the product was a mixture, probably the result of intramolecular cyclization of the aldehyde and amide groups. The presence of aldehyde in the mixture was verified by HNMR which showed a peak at 9.81 ppm. This crude material was used as is in reductive amination reactions.

INTERMEDIATE **8**



Step A:

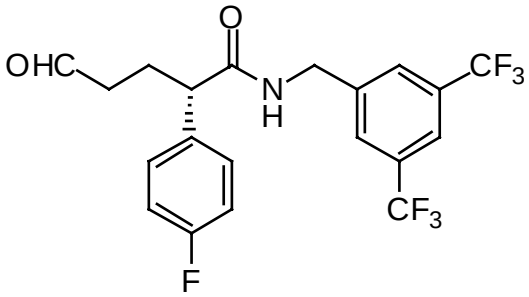


Intermediate (*S*)-**5** (7.97 g, 19.0 mmol), prepared as described above, was dissolved in THF (95 mL), cooled to 0 °C, and treated dropwise with BH_3•THF (1.0 M solution in THF, 9.51 mL, 9.51 mmol). The reaction mixture was permitted to warm to rt and stir overnight. Then $NaBO_3$•$4H_2O$ (4.39 g, 28.5 mmol) and water (8.6 mL) were added and the reaction mixture was stirred for an additional 2 h. The reaction mixture was diluted with ethyl acetate and washed twice with water, and once with brine. The organic phase was dried over anhydrous $MgSO_4$, filtered and concentrated. The crude product was purified initially by flash chromatography, eluting with a 2% MeOH/DCM-6% MeOH/DCM gradient, then by MPLC, eluting with 5% MeOH/EtOAc, to give 2.65 g of product (32%).

H NMR ($CDCl_3$, 500 MHz): δ 7.76 (s, 1H), 7.57 (s, 2H), 7.30 (m, 2H), 7.05 (m, 2H), 5.98 (br s, 1H), 4.59 (dd, J = 16.0 Hz, 6.50 Hz, 1H), 4.48 (dd, J = 15.5 Hz, 6.00 Hz, 1H), 3.68 (m, 2H), 3.48 (t, J = 7.50 Hz), 2.28 (m, 1H), 1.87 (m, 1H), 1.57 (m, 2H).

ESI-MS calc. for C20H18F7NO2: 437; Found: 438 (M+H).

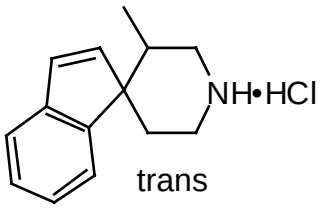
Step B:



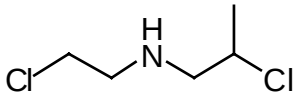
Oxalyl chloride (1.02 mL, 11.7 mmol) in DCM (10 mL) at -78 °C was treated dropwise with a solution of DMSO (1.65 mL, 23.4 mmol) in DCM (3 mL). Then the alcohol from Step A above (2.55 g, 5.84 mmol) in DCM (30 mL) was added dropwise. Finally the reaction mixture was treated with TEA (6.50 mL, 46.7 mmol), stirred at -78 °C for an additional 30 min, then warmed to rt. After one h, the reaction mixture was diluted with DCM and poured into 1 N HCl. The phases were separated and

the organic layer was further washed with saturated $NaHCO_3$ solution, and brine, dried over $MgSO_4$, filtered, and concentrated. The crude aldehyde was used as is.
ESI-MS calc. for C20H16F7NO2: 435; Found: 436 (M+H).

INTERMEDIATE *trans*-spiropiperidine

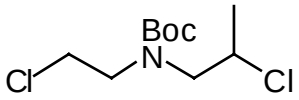


Step A:



To a solution of thionyl chloride (6.58 mL, 10.7 g, 90.2 mmol) in $CHCl_3$ (10 mL) was added dropwise commercially available 1-(2-hydroxyethylamino)-2-propanol (5.0 g, 42 mmol) in $CHCl_3$ (5 mL). The resulting reaction was exothermic. The reaction mixture was brought to reflux whereupon it became a thick slurry. An additional 5 mL of $CHCl_3$ was added. The reaction mixture was stirred at reflux for 2.5 h, then concentrated under vacuum to afford 7.97 g (99%) of crude salt.
ESI-MS calc. for C5H11Cl2N: 155; Found: 156 (M+H).

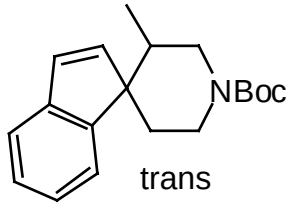
Step B:



The hydrochloride salt prepared as described in Step A above (7.89 g, 41.0 mmol) and Boc_2O (8.94 g, 41.0 mmol) were combined in DCM (75 mL). Triethylamine (8.6 mL, 6.2 g, 62 mmol) was then added and an ice water bath was used to control the exotherm. The reaction was then allowed to stir at rt for 6 h. The mixture was then diluted with DCM and washed three times with 1 N HCl, once with saturated $NaHCO_3$ solution, and once with brine. The organic layer was dried over $MgSO_4$, filtered, and concentrated in vacuo. The resulting crude product was purified by MPLC, eluting with a 10-15% gradient of ethyl acetate/hexane, to give 4.45 g (42%) of pure product.

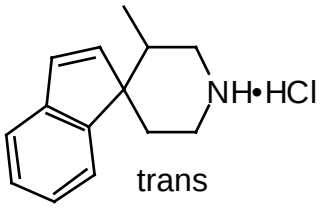
H NMR ($CDCl_3$, 400 MHz): δ 4.30, 4.17 (m, 1H, rotamers), 3.50-3.72 (m, 5H), 3.37 (dd, J = 14.8, 7.6 Hz, 0.5 H, rotamer), 3.21 (dd, J = 14.4, 8.4 Hz, 0.5 H, rotamer), 1.46 (app d, J = 6.8 Hz, 3H), 1.45 (s, 9H).

Step C:



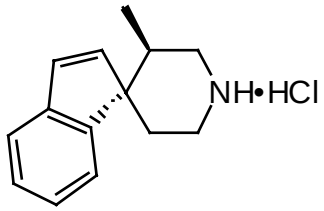
To a THF solution of LHMDS (1.0 M, 36.5 mL, 36.5 mmol) at 0 °C was added indene (2.02 g, 17.4 mmol) in THF (10 mL), dropwise. The reaction mixture was stirred at 0 °C for 50 min., then the dichloride prepared as described in Step B above (4.45 g, 17.4 mmol) was added in THF (15 mL), dropwise over 5-6 min. The resulting purple solution was stirred at 0 °C for 45 min., then warmed to rt and stirred for 48 h. The reaction mixture was diluted with ethyl acetate and washed with brine. The organic layer was dried over $MgSO_4$, filtered, and concentrated. Purification by MPLC, eluting with 20% ethyl acetate/hexane, afforded 3.71 g (71%) of clear oil.
ESI-MS calc. for $C_{19}H_{25}NO_2$: 299; Found: 300 (M+H).

Step D:

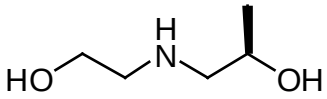


The Bocpiperidine prepared in Step C (3.66 g, 12.2 mmol) was dissolved in anhydrous 4 N HCl (30 mL, 120 mmol) and stirred at rt for 45 min. The reaction mixture was concentrated to give 2.93 g crude product. H NMR analysis indicated that the product was a 93:7 ratio of trans to cis isomers.
H NMR trans (CD_3OD, 400 MHz): δ 7.20-7.37 (m, 4H), 6.95 (d, J = 5.6 Hz, 1H), 6.80 (d, J = 6.0 Hz, 1H), 3.52 (m, 1H), 3.42 (ddd, J = 12.8, 4.0, 1.2 Hz, 1H), 3.29 (m, 1H), 3.07 (t, J = 12.8 Hz, 1H), 2.48 (m, 1H), 2.37 (dt, J = 4.4, 14.4 Hz, 1H), 1.45 (dt, J = 14.4, 2.4 Hz, 1H), 0.40 (d, J = 6.8 Hz, 3H).

INTERMEDIATE **41**

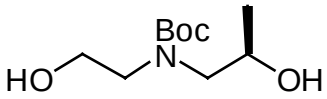


Step A:



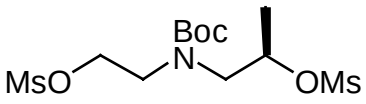
To a cooled (0 °C) solution of ethanolamine (41.8 g, 0.685 mol) in water (90 mL) was added neat (R)-propylene oxide (4.97 g, 85.6 mmol), dropwise. After 1 h at 0 °C the reaction was allowed to rise to rt and stirred overnight. The reaction mixture was concentrated at ~80 °C in vacuo to remove the water and most of the ethanolamine, to give 11.79 g of crude product, containing some residual ethanolamine. This material was used without further purification in Step B.

Step B:



The diol prepared in Step A (11.8 g crude [~86% pure], ca. 83 mmol) was dissolved in DCM (150 mL) and treated with Boc_2O (23.4 g, 107 mmol) in DCM (75 mL) over 15 min. The reaction mixture was stirred over the weekend, concentrated, and purified by MPLC, eluting with 5% MeOH/EtOAc to provide 14.8 g (81%) of product.

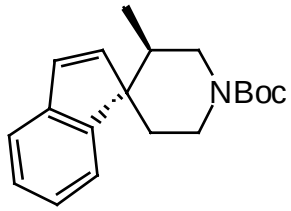
Step C:



To a solution of the Boc-protected diol prepared in Step B (13.2 g, 60.3 mmol) and triethylamine (21.0 mL, 15.3 g, 151 mmol) in DCM (150 mL) at 0 °C was added dropwise methanesulfonyl chloride (9.56 mL, 14.1 g, 125 mmol). The reaction

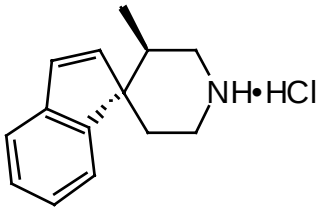
mixture was then stirred for 1.5 h, diluted with more DCM (100 mL) and washed with 3N HCl (250 mL). The aqueous layer was extracted again with DCM (200 mL), and the organic layers were combined and washed with 1N HCl (250 mL), saturated $NaHCO_3$ solution (250 mL), and brine (250 mL). The organic layer was dried over $MgSO_4$, filtered, and concentrated to give 22.8 g of crude bis-mesylate, which was used immediately. If not used immediately the bis-mesylate underwent decomposition.

Step D:



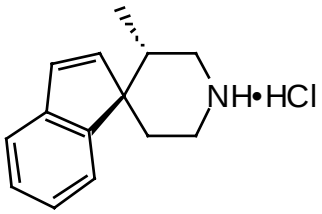
Indene (7.03 mL, 7.00 g, 60.3 mmol) was added dropwise over 4 min to a 1.0 M THF solution of LHMDS (127 mL, 127 mmol) at 0 °C. After stirring for an additional 30 min., this solution was transferred via cannula to a solution of bis-mesylate (22.6 g, 60.3 mmol), prepared as described in Step C above, in THF (75 mL) at 0 °C. The mixture was stirred for 2 h, warmed to rt and stirred overnight. The reaction mixture was partially concentrated and then partitioned between ethyl acetate and water. The organic layer was extracted again with ethyl acetate and the organic layers were combined. The organic phase was then washed with brine, dried over $MgSO_4$, filtered and concentrated to give 17.3 g of crude product. Purification by MPLC, eluting with 15% ethyl acetate/hexane, afforded 9.51 g (53%) of piperidine as a ~3:1 mixture of trans to cis (determined by H NMR). The mixture was crystallized from hot hexane to give 6 g (33%) of pure trans isomer (>20:1 by H NMR).
H NMR ($CDCl_3$, 400 MHz): δ 7.29 (dt, J = 6.4, 1.6 Hz, 1H), 7.20 (m, 3H), 6.83 (d, J = 6.0 Hz, 1H), 6.67 (d, J = 5.6 Hz, 1H), 4.20 (br s, 2H), 2.97 (br t, J = 3.2 Hz, 1H), 2.69 (br t, J = 2.4 Hz, 1H), 2.16 (m, 1H), 2.07 (dt, J = 4.4, 13.2 Hz, 1H), 1.49 (s, 9H), 1.25 (m, 1H), 0.31 (d, J = 6.8 Hz, 3H).

Step E:



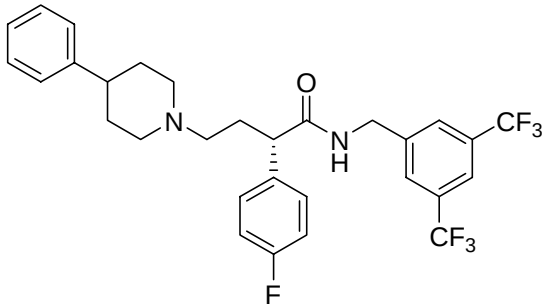
The Boc-piperidine prepared in Step D (4.35 g, 14.5 mmol) was dissolved in an anhydrous 4 N HCl solution in THF and stirred at rt for 1 h. The reaction mixture was then concentrated to afford 3.81 g of product.
EI-MS calc. for C14H17N: 199; Found: 200 $(M+H)^+$.
High res TOF MS calc. for C14H17N: 199.1361; Found: 200.1439 (M+H).

INTERMEDIATE - enantiomers of **41**



Intermediate 7 was prepared in exactly the same way as intermediate 6 except the starting epoxide was (S)-(-)-propylene oxide.
H NMR (CD_3OD, 400 MHz): δ 7.22-7.36 (m, 4H), 6.95 (d, J = 5.6 Hz, 1H), 6.80 (d, J = 6.0 Hz, 1H), 3.53 (m, 1H), 3.42 (m, 1H), 3.29 (m, 1H), 3.06 (t, J = 12.8 Hz, 1H), 2.48 (m, 1H), 2.37 (dt, J = 4.4 Hz, 14.4 Hz, 1H), 1.45 (dt, J = 14.8, 2.4 Hz, 1H), 0.40 (d, J = 6.8 Hz, 3H).

Target compound **11**



The crude aldehyde intermediate **7** (107 mg, 0.255 mmol), prepared as described above, was combined with 4-phenylpiperidine (49.3 mg, 0.306 mmol), $NaB(OAc)_3H$ (108 mg, 0.510 mmol) and 4 °A molecular sieves (250 mg) in DCE (5 mL) and stirred overnight. The reaction mixture was filtered through celite, diluted with ethyl acetate, and washed with saturated $NaHCO_3$ solution, followed by brine. The organic layer was dried over $MgSO_4$, filtered, and concentrated. The crude product was purified by preparative TLC, eluting with 0.75/6.75/92.5 NH_4OH/MeOH/DCM, providing the product as a free base.

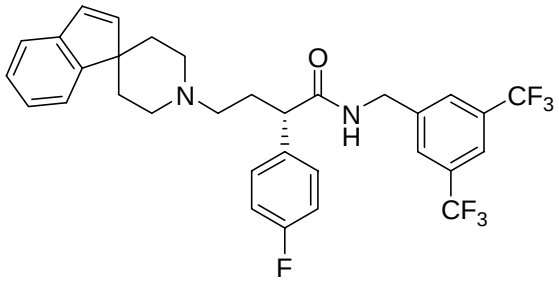
H NMR ($CDCl_3$, 400 MHz): δ 7.71 (s, 1H), 7.64 (s, 2H), 7.28-7.37 (m, 4H), 7.21 (m, 3H), 7.01 (m, 2H), 4.51 (m, 2H), 4.15 (br s, 1H), 3.20-3.33 (m, 2H), 2.32-2.75 (m, 6H), 2.21 (br m, 2H), 2.05 (m, 1H), 1.93 (m, 2H).

The free base was converted to its HCl salt by dissolving it in DCM (2 mL) and adding anhydrous 4 N HCl in dioxane (70μL, 0.3 mmol), then concentrated off the solvents to give 50.2 mg (33%) of a white solid.

ESI-MS calc. for C30H29F7N2O: 566; Found: 567 (M+H).

High res TOF MS calc. for C30H29F7N2O: 566.2168; Found: 567.2246 (M+H).

Target compound **26**



Target compound **26** was prepared as described for compound **11** above from aldehyde intermediate **7** (125 mg, 0.297 mmol). The crude product was purified by preparative TLC, eluting with 0.5/4.5/95 NH_4OH/MeOH/DCM, providing the product (84 mg) as its free base.

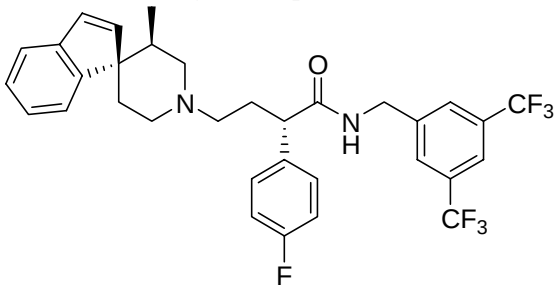
H NMR ($CDCl_3$, 400 MHz): δ 7.73 (s, 1H), 7.60 (s, 2H), 7.15-7.33 (m, 6H), 7.04 (m, 2H), 6.78 (d, J = 6 Hz, 1H), 6.72 (d, J = 6 Hz, 1H), 6.44 (br s, 1H), 4.59 (dd, J = 16, 6 Hz, 1H), 4.49 (dd, J = 16, 6 Hz, 1H), 3.66 (m, 1H), 2.91 (m, 2H), 2.25-2.44 (m, 5H), 2.11 (br m, 2H), 1.98 (m, 1H), 1.33 (m, 2H).

The free base was converted to its HCl salt by dissolving it in DCM (2 mL) and adding anhydrous 4 N HCl in dioxane (70μL, 0.3 mmol), then concentrated off the solvents.

ESI-MS calc. for C32H29F7N2O: 590; Found: 591 (M+H).

High res TOF MS calc. for C32H29F7N2O: 590.2168; Found: 591.2246 (M+H).

Target compound **37**



Target compound **37** was prepared as described for compound **11** above from aldehyde intermediate **7** (125 mg, 0.297 mmol). The crude product was purified twice by preparative TLC, eluting first with 0.25/2.25/97.5 NH_4OH/MeOH/DCM, then with 75% ethyl acetate/hexanes, providing the product as its free base.

H NMR ($CDCl_3$, 400 MHz): δ 7.73 (s, 1H), 7.60 (s, 2H), 7.14-7.32 (m, 6H), 7.04 (m, 2H), 6.77 (d, J = 6 Hz, 1H), 6.61 (d, J = 6 Hz, 1H), 6.55 (br s, 1H), 4.59 (dd, J = 16, 6 Hz, 1H), 4.49 (dd, J = 16, 6 Hz, 1H), 3.66 (m, 1H), 2.79-2.95 (m, 2H), 2.35-2.45 (m, 3H), 2.10-2.30 (br m, 3H), 1.93-2.04 (m, 2H), 1.26 (m, 1H), 0.27 (d, J = 7 Hz, 3H).

The free base was converted to its HCl salt by dissolving it in DCM (2 mL) and adding anhydrous 4 N HCl in dioxane (70μL, 0.3 mmol), then concentrated off the solvents.

ESI-MS calc. for C33H31F7N2O: 604; Found: 605 (M+H).

High res TOF MS calc. for C33H31F7N2O: 604.2324; Found: 605.2403 (M+H).

2) COMPOUND PURITY/HPLC DATA

Compound purities were determined by two diverse HPLC conditions. Two conditions are as follows:

HPLC conditions #1:

Column: Waters Sunfire 20 mm X 2.1 mm X 3.5 μM

Solvents

A = 0.1% formic acid in water

B = 0.1% formic acid in acetonitrile

```
HP1100 LC Pump Initial Conditions

Solvents
A% 0.1% formic acid in water       95.0
B% 0.1% formic acid in acetonitrile5.0
C%                                 0.0
D%                                 0.0
```

```
Valve A set to channel
Valve B set to channel
Flow (ml/min)                              3.000
Stop Time (mins)                    1.8
Min Pressure (bar)                         0
Max Pressure (bar)                         400
Oven Temperature Left(°C)                  30.0
Oven Temperature Right(°C)                 50.0

HP1100 LC Pump Gradient Timetable

The gradient Timetable contains 6 entries which are :

Time     A%  B%     C%    D%  Flow  Pressure
0.00   95.0   5.0   0.0   0.0 3.000   400
1.00    5.0  95.0   0.0   0.0 3.000   400
1.25    2.0  98.0   0.0   0.0 3.000   400
1.59    2.0  98.0   0.0   0.0 3.000   400
1.60   95.0   5.0   0.0   0.0 3.000   400
1.75   95.0   5.0   0.0   0.0 3.000   400


HP1100 PDA Spectrum

Storage type : All
Start Range (nm)                    220
End Range (nm)                             400
Range Interval (nm)                        4.0
Threshold (mAU)                            0.1
```

<u>HPLC conditions #2:</u>

Column: Waters Xterra 50 mm X 3 mm X 3.5 μM

```
HP1100 LC Pump Initial Conditions

Solvents
A = 0.05% TFA in water
B = 0.05% TFA in acetonitrile

Solvents
A%                                  90.0
B%                                  10.0
C%                                  0.0
D%                                  0.0
Valve A set to channel                     1
Valve B set to channel                     1
Flow (ml/min)                              1.000
Stop Time (mins)                    5.5
Min Pressure (bar)                         0
Max Pressure (bar)                         400
Oven Temperature Left(°C)                  40.0
Oven Temperature Right(°C)                 30.0

HP1100 LC Pump Gradient Timetable
```

The gradient Timetable contains 5 entries which are :

Time	A%	B%	C%	D%	Flow (ml/min)	Pressure
0.00	90.0	10.0	0.0	0.0	1.000	400
3.75	2.0	98.0	0.0	0.0	1.000	400
4.75	2.0	98.0	0.0	0.0	1.000	400
4.76	90.0	10.0	0.0	0.0	1.000	400
5.50	90.0	10.0	0.0	0.0	1.000	400

HPLC data:

Compound number	Retention time (min)	Purity (%)	HPLC condition #
11	0.77	100	1
11	3.01	97	2
26	0.78	100	1
26	3.04	98	2
37	0.78	100	1
37	3.22	100	2

All other target analogs had HPLC purities of greater than or equal to 95%.