Experimental

General

Unless otherwise noted all reagents were obtained from commercial suppliers and used without further purification. Chromatography columns were prepared using Fisher Chemicals 60A 35–70 micron silica gel. Nuclear magnetic resonance spectra were recorded using Bruker DPX300 and DPX500 MHz spectrometers. Chemical shifts are reported in parts per million (δ) downfield relative to the internal reference tetramethylsilane. Unless otherwise specified NMR spectra were recorded in deuterochloroform at room temperature. Abbreviations used: Ar = aromatic, d = doublet, dd = doublet of doublets, dt = doublet of triplets, m = multiplet, q = quartet, s = singlet, t = triplet. Mass spectra were recorded using a micromass ZMD 2000 spectrometer employing the electrospray (ES+) ionisation technique. Accurate molecular masses were obtained from Walters LCT, GCT or Bruker MicroTof spectrometers. Infra-red spectra were recorded using a Perkin-Elmer FT-IR spectrometer. IR spectra of liquids were recorded as thin films on sodium chloride plates. IR spectra of solids were recorded using dichloromethane as solvent on sodium chloride plates. Melting points are uncorrected.

General Procedures

Chemo-Selective C-Alkylation (A)
A mixture of 2'-Aminoacetophenone (1.0 mmol), alcohol (2.0 mmol), $[Cp^*IrCl_2]_2$ (2.5 mol%) and potassium hydroxide (20 mol%) was dissolved in toluene (3 mL) and added to a microwave reaction vessel. The reaction mixture was then magnetically stirred under microwave irradiation (300 W) at 110 °C for 30-40 min. The progression of reaction was monitored by TLC. Upon completion of reaction, the crude mixture was purified by column chromatography.

Chemo-Selective N-Alkylation (B)
A mixture of 2'-Aminoacetophenone (1.0 mmol), alcohol (3.0 mmol), $[Cp^*IrCl_2]_2$ (2.5 mol%) and potassium carbonate (20 mol%) was dissolved in xylene (3 mL) and added to a microwave reaction vessel. The reaction mixture was then magnetically stirred under microwave irradiation (300 W) at 140 °C for 60 min. The progression of reaction was monitored by TLC. Upon completion of reaction, the crude mixture was purified by column chromatography.

1-(2-Amino-phenyl)-3-phenyl-propan-1-one (2)
Prepared by general procedure **A** on a 1.0 mmol scale from benzyl alcohol (0.216 g, 2.0 mmol). Crude mixture was purified using column chromatography, eluting with 1:19 v/v ethyl-acetate/ hexane to give the product (**2**) (0.126 g, 60%) as pale yellow plates, m.p. 76-78 °C; δ_H (300 MHz, $CDCl_3$); 7.78 (dd, 1H, *J* 8.1, 1.3 Hz, ArH), 7.39-7.24 (m, 6H, ArH), 6.68-6.63 (m, 2H, ArH), 6.31 (s, 2H, N-H), 3.31 (t, 2H, *J* 7.5 Hz, CH_2), 3.04 (t, 2H, *J* 7.5 Hz, CH_2); δ_C (75.5 MHz, $CDCl_3$); 201.6, 150.4, 141.5, 134.3, 131.0, 128.5, 128.4, 126.1, 117.8, 117.4, 115.8; 40.01, 30.59 ν_{max}/cm^{-1} 3491, 3353,3054, 1649, 1614; H .R.M.S. [ES+] found MH^+ 226.1219. $C_{15}H_{15}NO$ requires *MH* 226.1226.

1-(2-Amino-phenyl)-3-(4-methoxy-phenyl)-propan-1-one (3)
Prepared by general procedure **A** on a 1.0 mmol scale from 4-methoxybenzyl alcohol (0.276 g, 2.0 mmol). Crude mixture was purified with column chromatography, eluting 1:3 v/v ethyl-acetate/hexane to give the product (**3**) (0.194 g, 76%) as pale yellow oil; δ_H (300 MHz, $CDCl_3$); 7.73 (dd, 1H, *J* 8.1, 1.3 Hz, ArH), 7.17, (app t d, 1H, *J* 8.7, 1.4 Hz, ArH), 7.15 (d, 2H, *J* 8.7 Hz, ArH), 6.85 (d, 2H, *J* 8.7 Hz, ArH), 6.65-6.60 (m, 2H, ArH), 6.28 (s, 2H, N-H), 3.78 (s, 3H, O-CH_3), 3.23 (t, 2H, *J* 7.5 Hz, CH_2), 2.98 (t, 2H, *J* 7.5 Hz, CH_2); δ_C (75.5 MHz, $CDCl_3$); 201.7, 157.9, 150.4, 134.3, 133.5, 131.1, 129.5, 117.8, 117.4, 115.8, 113.9, 55.3, 41.3, 29.8; ν_{max} (film)/cm^{-1} 3470, 3346, 2985, 1647, 1615; H.R.M.S. [ES+] found MNa^+ 278.1156. $C_{16}H_{17}NO_2$ requires *MNa* 278.1151.

1-(2-Amino-phenyl)-3-(3,4-dimethoxy-phenyl-propan-1-one (4)
Prepared by general procedure **A** on a 1.0 mmol scale from 3, 4-dimethoxbenzyl alcohol (0.336 g, 2.0 mmol). Crude mixture was purified using column chromatography, eluting 1:4 v/v ethyl-acetate/ hexane to give the product (**4**) (0.179 g, 63%) as pale yellow plates, m.p. 97-98 °C; δ_H (300 MHz, $CDCl_3$); 7.75 (dd, 1H, *J* 8.1, 1.4 Hz, ArH),7.30 (app td, 1H, *J* 8.1,1.4 Hz ArH) 6.89-6.85 (m, 3H, ArH), 6.69-6.65 (m, 2H, ArH), 6.31 (s, 2H, N-H), 3.89 (s, 3H, O-CH_3), 3.88 (s, 3H, O-CH_3), 3.30 (t, 2H, *J* 7.5 Hz, CH_2), 3.01 (t, 2H, *J* 7.5 Hz, CH_2); δ_C (75.5 MHz, $CDCl_3$); ν_{max} (film)/cm^{-1} 3491, 3354, 1648; H.R.M.S. [ES+] found MNa^+ 308.1246. $C_{17}H_{19}NO_3$ requires *MNa* 308.1257.

1-(2-Amino-phenyl)-3-furan-2-yl-propan-1-one (5)
Prepared by general procedure **A** on a 1.0 scale from furfuryl alcohol (0.220 g, 2.0 mmol). Crude mixture was purified using column chromatography, eluting 1:3 v/v ethyl-acetate/ hexane to give the product (**5**) (0.282 g, 80%) as pale yellow plates, m.p. 79-82 °C; δ_H (300 MHz, $CDCl_3$); 7.78 (dd, 1H, *J* 8.4, 1.4 Hz, ArH), 7.49 (d, 1H, *J* 1 Hz Furyl-H), 7.26 (td, 1H, *J* 8.2, 1.4 Hz ArH), 6.69-6.61 (m, 2H, ArH), 6.43 (br s, 3H, N-H and Furyl-H), 6.08 (d, 1H, *J* 2.5 Hz, Furyl-H), 3.34 (t, 2H, *J* 7.5 Hz, CH_2), 3.09 (t, 2H, *J* 7.5 Hz, CH_2); δ_C (75.5 MHz, $CDCl_3$); 200.8, 155.1, 150.4, 141.1, 134.4, 131.0, 117.8, 117.4, 115.8, 110.6, 105.2, 37.4, 22.8; ν_{max} (film)/cm^{-1} 3491, 3355, 3054, 1651, 1615; H .R.M.S. [ES+] found MH^+ 216.1013. $C_{13}H_{13}NO_2$ requires *MH* 216.1019.

1-(2-Amino-phenyl)-3-thiophen-2-yl-propan-1-one (6)
Prepared by general procedure **A** on a 1.0 mmol scale from thiophene-2-methanol. Crude mixture was purified using column chromatography, eluting 1:3 v/v ethyl-acetate/ hexane to give the product (**6**) (0.172g, 74%) as pale yellow plates, m.p. 52-55 °C**;** δ_H (300 MHz, $CDCl_3$); 7.80 (dd, 1H, *J* 8.6, 1.5 Hz, ArH), 7.28 (app td, 1H, *J* 8.4, 1.5 Hz ArH), 7.12 (dd, IH, *J* 5.1, 1.2 Thienyl-H), 6.9 (dd, 1H, *J* 5.1, 3.4 Hz Thienyl-H), 6.9 (d, 1H, *J* 3.4 Hz Thienyl-H), 6.7-6.6 (m, 2H, ArH) 6.29 (s, 2H, N-H), 3.38-3.3.3 (m, 4H, 2xCH_2); δ_C (75.5 MHz, $CDCl_3$); 200.7, 150.4, 144.2, 134.4, 131.0, 126.9, 124.6, 123.3, 117.8, 117.4, 115.9, 41.0, 24.6; ν_{max} (film)/cm^{-1} 3491, 3355,3054, 1649, 1614; H.R.M.S. [ES+] found MNa^+ 254.0606. $C_{13}H_{13}NOS$ requires *MNa* 254.0610.

1-(2-Amino-phenyl)-3-pyridin-4-yl-propan-1-one (7)
Prepared by general procedure **A** on a 1.0 mmol scale from 4-pyridine methanol (0.209 g, 2.0 mmol). Crude mixture was purified using column chromatography, eluting 1:3 v/v ethyl-acetate/ hexane to give the product (**7**) (0.170 g, 75%) as orange plates, m.p. 151-153 °C; δ_H (300 MHz, $CDCl_3$); 8.53 (dd, 2H, *J* 4.5, 1.5 Hz, Py-H), 7.74 (dd, 1H, *J* 8.1, 1.2 Hz, ArH), 7.30 (td, 1H, *J* 8.1, 1.4 Hz ArH), 7.20 (dd, 2H, *J* 4.5, 1.5 Hz Py-H), 6.70-6.63 (m, 2H, ArH), 6.30 (s, 2H, N-H), 3.33 (t, 2H, *J* 6 Hz, CH_2), 3.07 (t, 2H, *J* 6 Hz, CH_2); δ_C (75.5 MHz, $CDCl_3$); 200.3, 150.5, 150.4, 149.9, 134.5, 130.8, 123.9, 117.6, 117.5, 115.9, 39.3, 29.54; ν_{max} (film)/cm^{-1} 3492, 3405, 1650,1615; H.R.M.S. [ES+] found MH^+ 227.1179. $C_{14}H_{14}N_2O$ requires *MH* 227.1179.

1-(2-Amino-phenyl)-3-(4-bromo-phenyl)-propan-1-one (8)
Prepared by general procedure **A** on a 1.0 mmol scale from 4-bromobenzyl alcohol (0.374 g, 2.0 mmol). Crude mixture purified using column chromatography, eluting 1:19 v/v ethyl-acetate/ hexane to give (**8**) (0.217 g, 71%) as pale yellow plates, m.p. 106-109 °C; H.R.M.S. δ_H (300 MHz, $CDCl_3$); 7.76 (dd, 1H, *J* 8.1, 1.4 Hz, ArH), 7.46 (d, 2H, *J* 8.4 Hz, ArH), 7.29 (m, 2H, ArH), 7.16 (d, 2H, *J* 8.4 Hz, ArH), 6.69-6.65 (m, 2H, ArH), 6.30 (s, 2H, N-H), 3.28 (t, 2H, *J* 7.5 Hz, CH_2), 3.03 (t, 2H, *J* 7.5 Hz, CH_2); δ_C (75.5 MHz, $CDCl_3$); 201.0, 150.4, 140.5, 134.4, 131.5, 130.9, 130.2, 119.8, 117.7, 117.4, 115.8, 40.6, 29.9; ν_{max} (film)/cm^{-1} 3491, 3355, 3054, 1650, 1614; H.R.M.S. [ES+] found MH^+ 304.0318. $C_{15}H_{14}BrNO$ requires *MH* 304.0332.

1-(2-Amino-phenyl)-3-(3-bromo-phenyl)-propan-1-one (9)
Prepared by general procedure **A** on a 1.0 mmol scale from 3-bromobenzyl alcohol. Crude mixture was purified using column chromatography, eluting 1:19 v/v ethyl-acetate/ hexane to give the product (**9**) (0.224g, 73%) as pale yellow plates, m.p. 79-81 °C**;** δ_H (300 MHz, $CDCl_3$); 7.74 (dd, 1H, *J* 8.3, 1.5 Hz, ArH), 7.44 (s, 1H, ArH), 7.38-7.24 (m, 4H, ArH), 6.74-6.64 (m, 2H, ArH), 6.32 (s, 2H, N-H), 3.27 (t, 2H, *J* 7.5 Hz, CH_2), 3.03 (t, 2H, *J* 7.5 Hz, CH_2); δ_C (75.5 MHz, $CDCl_3$); 200.9, 150.4, 144.0, 134.8, 131.5, 131.1, 131.0, 129.9, 129.2, 127.7, 117.8, 117.7, 115.9, 40.6, 30.1; ν_{max} (film)/cm^{-1} 3491, 3355, 3054, 1649, 1614; H .R.M.S. [ES+] found MH^+ 304.0330. $C_{15}H_{15}BrNO$ requires *MH* 304.0332.

1-(2-Amino-phenyl)-3-naphthalen-2-yl-propan-1-one (10)
Prepared by general procedure **A** on a 1.0 mmol scale from 2-napthalene-methanol. Crude mixture was purified using column chromatography, eluting 1:4 v/v ethyl-acetate/ hexane to give the product (**10**) (0.183g, 66%) as orange oil; δ_H (300 MHz, $CDCl_3$); 7.80-7.66 (m, 4H, ArH), 7.60 (S, 1H, ArH),7.50-7.35 (m, 4H, ArH), 7.22 (td, 1H, *J* 8.3, 1.5 Hz, ArH), 6.62-6.57 (m, 2H, ArH), 6.27 (s, 2H, N-H), 3.32 (t, 2H, *J* 7.5 Hz, CH_2), 3.15 (t, 2H, *J* 7.5 Hz, CH_2); δ_C (75.5 MHz, $CDCl_3$); 201.5, 150.5, 139.1, 134.4, 133.7, 132.1, 130.7, 128.1, 127.5, 127.3, 126.9, 126.5, 126.1, 125.4, 117.8, 117.5, 115.4, 40.9, 30.1; ν_{max} (film)/cm^{-1} 3476, 3346, 1647; H.R.M.S. [ES+] found MNa^+ 298.1196. $C_{19}H_{17}NO$ requires *MNa* 298.1202.

1-(2-Amino-phenyl)-3-(4-benzyloxy -phenyl) -propan-1-one (11)
Prepared by general procedure **A** on a 1.0 mmol scale from 4-benzyloxybenzyl alcohol. Crude mixture was separated using column chromatography, eluting 1:4 v/v ethyl-acetate/ hexane to give (**11**) (0.228g, 70%) as pale yellow oil; δ_H (300 MHz, $CDCl_3$); 7.75 (dd, 1H, *J* 8.5, 1.5 Hz, ArH), 7.48-7.2 (m, 6H, ArH), 7.16 (d, 2H, *J* 8.7 Hz, ArH), 6.92-6.90 (d, 2H, *J* 8.7 Hz ArH), 6.67-6.58 (m, 2H, ArH), 6.27 (s, 2H, NH), 5.02 (s, 2H, O-CH_2),

3.22 (t, 2H, *J* 7.5 Hz, CH_2), 2.98 (t, 2H, *J* 7.5 Hz, CH_2); δ_C (75.5 MHz, $CDCl_3$); 201.7, 157.2, 150.4, 137.2, 134.3, 133.9, 131.1, 129.8, 128.8, 128.0, 127.7, 117.9, 117.4, 115.8, 114.9, 70.1, 41.3, 29.8; ν_{max} (film)/cm^{-1} 3474, 3346, 1647,1613; H.R.M.S. [ES+] found MH^+ 332.1642. $C_{22}H_{21}NO_2$ requires *MH* 332.1645.

1-(2-Benzylamino-phenyl)-ethanone (12)
Prepared by general procedure **B** on a 1.0 mmol scale from benzyl alcohol. Crude mixture was purified using column chromatography, eluting with hexane to give the product (**12**) (0.164g, 73%) as yellow plates, m.p. 71-73 °C; δ_H (300 MHz, $CDCl_3$); δ_H (300 MHz, $CDCl_3$); 9.30 (s, 1H, N-H), 7.76 (dd, 1H, *J* 8.1, 1.4 Hz, ArH), 7.50-7.20 (m, 6H, ArH), 6.70-6.60 (m, 2H, ArH), 4.50 (d, 2H, *J* 5.7 Hz, N-CH_2), 2.60 (s. 3H, CH_3). δ_C (75.5 MHz, $CDCl_3$); 201.0, 150.9, 138.7, 135.1, 132.7, 128.8, 128.3, 128.2, 117.8, 114.4, 112.2, 46.7, 28.0. ν_{max} (film)/cm^{-1}; 3319, 1638; H.R.M.S. [ES+] found MH^+ 226.1228. $C_{15}H_{15}NO$ requires *MH* 226.1226.

1-[2-(4-Methoxy-benzylamino)-phenyl]-ethanone (13)
Prepared by general procedure **B** on a 1.0 mmol scale from 4-methoxybenzyl alcohol. Crude mixture was purified using column chromatography, eluting 1:9 v/v ethyl-acetate/ hexane to give the product (**13**) (0.144g, 56%) as pale brown plates, m.p. 71-73 °C; δ_H (300 MHz, $CDCl_3$); 8.36 (s, 1H, N-H), 6.88 (dd, 1H, *J* 8.1, 1.4 Hz, ArH), 6.41-6.36 (m, 3H, ArH), 5.78 (d, 2H, *J* 8.4 Hz, ArH), 5.74 (d, 1H, *J* 8.5 Hz, ArH), 5.7 (td, 1H, *J* 8.5, 1.0 Hz, ArH) 3.60 (d, 2H, *J* 3Hz, N-CH_2), 2.91 (s. 3H, O-CH_3), 1.71 (s. 3H, CH_3); δ_C (75.5 MHz, $CDCl_3$); 200.9, 158.8, 150.9, 135.0, 132.7, 130.6, 128.3, 117.8, 114.3, 114.1, 112.2, 55.3, 46.2, 28.0. ν_{max} (film)/cm^{-1}; 3319, 1637,1611; H.R.M.S. [ES+] found MNa^+ 278.1139. $C_{16}H_{17}NO_2$ requires *MNa* 278.1149.

1-{2-[(Furan-2-ylmethyl)-amino]-phenyl}-ethanone (14)
Prepared by general procedure **B** on a 1.0 mmol scale from furfuryl alcohol. Crude mixture was purified using column chromatography, eluting 1:19 v/v ethyl-acetate/ hexane to give the product (**14**) (0.108g, 50%) as orange plates, m.p. 73-75 °C; δ_H (300 MHz, $CDCl_3$); 9.21 (s, 1H, N-H), 7.76 (dd, 1H, *J* 8.1, 1.5 Hz, ArH), 7.33 (m , 2H, ArH, Furyl-H), 6.78 (d, 1H, *J* 8.5 Hz, Ar-H), 6.63 (app td, 1H, *J* 8.1, 1.2 Hz, ArH), 6.32 (dd, 1H, *J* 3.2, 1.8 Hz, Furyl-H), 6.23 (dd, 1H, *J* 3.2, 1.0 Hz, Furyl-H), 4.43 (d, 2H, *J* 5.6 Hz, N-CH_2), 2.57 (s. 3H, CH_3); δ_C (75.5 MHz, $CDCl_3$); 201.0, 152.1, 150.5, 142.0, 135.0, 132.7, 118.0, 114.7, 111.8, 110.3, 106.9, 40.1, 28.0; ν_{max} (film)/cm^{-1}; 3312, 1639, 1607; [ES+] found MH^+ 216.1017. $C_{13}H_{13}NO_2$ requires *MH* 216.1019.

1-[2-(4-Bromo-benzylamino)-phenyl]-ethanone (15)
Prepared by general procedure **B** on a 1.0 mmol scale from 4-bromobenzyl alcohol. Crude mixture was purified using column chromatography, eluting 1:19 v/v ethyl-acetate/ hexane to give the product (**15**) (0.282g, 92%) as pale yellow plates, m.p. 79-80 °C; δ_H (300 MHz, $CDCl_3$); 9.33 (s, 1H, N-H), 7.68 (dd, 1H, *J* 8.1, 1.5 Hz, ArH), 7.44 (d, 2H, *J* 8.4 Hz, ArH), 7.31-7.22 (m, 3H, ArH), 6.66- 6.55 (m, 2H, ArH), 4.41 (d, 2H, *J* 5.9 Hz, N-CH_2), 2.61 (s, 3H, CH_3); δ_C (75.5 MHz, $CDCl_3$); 201.2, 150.6, 137.8, 135.1, 132.8, 131.8, 128.7, 120.9, 118.0, 114.7, 112.1, 46.1, 28.1; ν_{max} (film)/cm^{-1}; 3314, 1639; H.R.M.S. [ES+] found MNa^+ 326.0144. $C_{15}H_{14}BrNO$ requires *MNa* 326.0151.

1-[2-(3-Bromo-benzylamino)-phenyl]-ethanone (16)
Prepared by general procedure **B** on a 1.0 mmol scale from 3-bromobenzyl alcohol. Crude mixture was purified using column chromatography, eluting 1:19 v/v ethyl-acetate/ hexane to give (**16**) (0.192g, 63%) as pale yellow thick oil. δ_H (300 MHz, $CDCl_3$); δ_H (300 MHz, $CDCl_3$); δ_H (300 MHz, $CDCl_3$); 9.30 (s, 1H, N-H), 7.79 (dd, 1H, *J* 8.1, 1.5 Hz, ArH), 7.48 (s, 1H, ArH), 7.40-7.2 (m, 4H, ArH), 6.67-6.55 (m, 2H, ArH) 4.44 (d, 2H, *J* 5.8 Hz, N-CH_2), 2.60 (s. 3H, CH_3). δ_C (75.5 MHz, $CDCl_3$); 201.0, 150.6, 141.3, 135.1, 132.8, 130.3, 129.9, 125.5, 122.8, 118.0, 114.8, 112.9, 46.1, 28.0. ν_{max} (film)/cm^{-1}; 3319, 1638; H.R.M.S. [ES+] found MH^+ 304.0313. $C_{15}H_{15}BrNO$ requires *MH* 304.0332