Supporting Information.

Domino Carbocationic Rearrangement of Aryl-2-(1-*N*-methyl/benzyl-3-indolyl)cyclopropyl Ketones: A Serendipitous Route to 1*H*-Cyclopenta[*c*]carbazole Framework

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Characterization data for compounds **2a**, **2e**, **3b**, **3c**, **3e**, **3g**, **3i-k**, **3m** and **7h**.

X-Ray crystallographic structure and crystal data of **3a**.

1-(4-Methoxyphenyl)-2-(1-*N*-methyl-3-indolyl)cyclopropyl ketone (2a). Yield 99% (0.30 g). Viscous liquid; R_f 0.92 (3.0:1.0 hexane-EtOAc); ^1H NMR (400 MHz, CDCl_3): δ 1.55-1.59 (m, 1H, CH), 1.92-1.96 (m, 1H, CH), 2.81-2.87 (m, 2H, CH), 3.62 (s, 3H, NCH_3), 3.74 (s, 3H, OCH_3), 6.82 (s, 1H, ArH), 6.85 (d, $J = 8.8$ Hz, 2H, ArH), 7.08 (t, $J = 6.34$ Hz, 1H, ArH), 7.20-7.26 (m, 2H, ArH), 7.61 (d, $J = 7.8$ Hz, 1H, ArH), 8.00 (d, $J = 8.8$ Hz, 2H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 16.7, 21.4, 26.9, 31.7, 54.6, 108.8, 113.0, 113.9, 118.2, 118.5, 121.2, 125.2, 127.3, 129.6, 130.1, 136.4, 162.7, 196.8.

1-(4-Chlorophenyl)-2-(1-*N*-methyl-3-indolyl)cyclopropyl ketone (2e). Yield 98% (0.30 g). Viscous liquid; R_f 0.80 (3.0:1.0 hexane-EtOAc); ^1H NMR (400 MHz, CDCl_3): δ 1.56-1.61 (m, 1H, CH), 1.89-1.94 (m, 1H, CH), 2.74-2.78 (m, 2H, CH), 3.66 (s, 3H, NCH_3), 6.81 (s, 1H, ArH), 7.06 (t, $J = 6.8$ Hz, 1H, ArH), 7.13-7.20 (m, 2H, ArH), 7.34 (d, $J = 8.6$ Hz, 2H, ArH), 7.55 (dd, $J = 7.9, 0.8$ Hz, 1H, ArH), 7.89 (d, $J = 8.3$ Hz, 2H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 17.6, 22.8, 27.9, 32.4, 109.3, 114.2, 118.7, 119.1, 121.9, 125.7, 128.6, 129.3, 135.9, 136.9, 138.9, 162.3, 197.7.

2-Benzoyl-6-*N*-methyl-3-phenyl-1*H*-cyclopenta[*c*]carbazole (3b). Yield 65% (0.13 g). Yellow crystals, mp 223-224 °C; R_f 0.67 (9.5:0.5 benzene-EtOAc); IR(KBr): 3047, 1610, 1481, 1350, 1142, cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 3.91 (s, 3H, NCH_3), 4.48 (s, 2H, CH_2), 7.07 (t, $J = 7.8$ Hz, 2H, ArH), 7.16-7.29 (m, 6H, ArH), 7.33-7.39 (m, 2H, ArH), 7.47 (d, $J = 7.6$ Hz, 1H, ArH), 7.52-7.58 (m, 4H, ArH), 8.22 (d, $J = 7.8$ Hz, 1H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 29.4, 39.4, 107.4, 108.7, 119.2, 119.6, 120.7, 122.1, 122.3, 125.9, 127.4, 127.9, 127.9, 129.1, 129.2, 129.6, 131.1, 134.7, 136.4, 137.1,

138.3, 138.8, 141.4, 153.0, 195.1; MS (m/z , %): 399 (M^+ , 39), 294 (100). Anal. Calcd for $C_{29}H_{21}NO$ (399.46): C, 87.18; H, 5.29; N, 3.50%. Found: C, 87.08; H, 5.36; N, 3.42%.

2-(3,4-Dimethoxybenzoyl)-3-(3,4-dimethoxyphenyl)-6-*N*-methyl-1*H*-cyclopenta[*c*]carbazole (3c). Yield 60% (0.16 g). Yellow crystals, mp 207-208 °C; R_f 0.15 (3.0:1.0 hexane-EtOAc); IR(KBr): 3003, 2937, 1604, 1512, 1465, 1263, 746 cm^{-1} ; 1H NMR (400 MHz, $CDCl_3$): δ 3.71 (s, 3H, OCH_3), 3.77 (s, 3H, OCH_3), 3.82 (s, 3H OCH_3), 3.84 (s, 3H, OCH_3), 3.88 (s, 3H, NCH_3), 4.43 (s, 2H, CH_2), 6.58 (d, J = 8.3 Hz, 1H, ArH), 6.79 (d, J = 8.0 Hz, 1H, ArH), 6.82 (d, J = 1.5 Hz, 1H, ArH), 7.04 (dd, J = 8.0, 1.7 Hz, 1H, ArH), 7.23-7.24 (m, 1H, ArH), 7.31 (dd, J = 8.2, 1.7 Hz, 1H, ArH), 7.34 (d, J = 7.3 Hz, 1H, ArH), 7.38 (d, J = 8.3 Hz, 1H, ArH), 7.45 (d, J = 8.0 Hz, 1H, ArH), 7.53 (t, J = 7.3 Hz, 1H, ArH), 7.67 (d, J = 8.3 Hz, 1H, ArH), 8.18 (d, J = 7.8 Hz, 1H, ArH); ^{13}C NMR (100 MHz, $CDCl_3$): δ 29.3, 39.7, 55.72, 55.73, 55.84, 55.85, 107.2, 108.6, 109.6, 110.8, 111.6, 113.2, 119.2, 119.5, 120.2, 122.0, 122.1, 122.2, 124.0, 125.8, 127.6, 131.4, 136.1, 136.8, 138.1, 141.1, 141.4, 148.1, 148.5, 148.8, 150.3, 152.0, 194.0 ; MS (m/z , %): 520 (M^+ , 100). Anal. Calcd for $C_{33}H_{29}NO_5$ (519.56): C, 76.28; H, 5.62; N, 2.69%. Found: C, 76.34; H, 5.21; N, 2.33%.

2-(4-Chlorobenzoyl)-3-(4-chlorophenyl)-6-*N*-methyl-1*H*-cyclopenta[*c*]carbazole (3e). Yield 61% (0.14 g). Yellow crystals, mp 210-211 °C; R_f 0.70 (8.5:1.5 hexane-EtOAc); IR(KBr): 3066, 2924, 1605, 1480, 1351, 1089 cm^{-1} ; 1H NMR (400 MHz, $CDCl_3$): δ 3.88 (s, 3H, NCH_3), 4.42 (s, 2H, CH_2), 7.09 (dd, J = 6.6, 1.9 Hz, 2H, ArH), 7.19 (brs, 3H, ArH), 7.32-7.37 (m, 2H, ArH), 7.45 (dd, J = 6.6, 1.9 Hz 2H, ArH), 7.44 –

7.49 (m, 2H, ArH), 7.52-7.56 (m, 2H, ArH), 8.17 (d, $J = 7.8$ Hz, 1H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 29.4, 39.4, 107.6, 108.7, 119.2, 119.8, 120.4, 122.0, 122.1, 126.1, 127.9, 128.3, 130.4, 130.8, 133.1, 134.3, 135.8, 137.1, 137.2, 137.6, 138.3, 141.5, 141.6, 151.9, 193.4; MS (m/z , %): 467 (M^+ , 23.6), 331 (15.2), 330 (44.6), 328 (100). Anal. Calcd for $\text{C}_{29}\text{H}_{19}\text{NOCl}_2$ (468.35): C, 74.36; H, 4.08; N, 2.99%. Found: C, 74.27; H, 4.13; N, 2.78%.

9-Bromo-2-benzoyl-6-*N*-methyl-3-phenyl-1*H*-cyclopenta[*c*]carbazole (3g). Yield 67% (0.15 g). Yellow crystals, mp 222-223 °C; R_f 0.68 (3.0:1.0 hexane-EtOAc); IR(KBr): 3058, 2927, 1604, 1482, 1346, cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 3.82 (s, 3H, NCH_3), 4.37 (s, 2H, CH_2), 7.06 (t, $J = 7.6$ Hz, 2H, ArH), 7.15 (dd, $J = 5.0, 1.9$ Hz, 2H, ArH), 7.19-7.22 (m, 2H, ArH), 7.25 (d, $J = 1.9$ Hz, 1H, ArH), 7.26-7.28 (m, 3H, ArH), 7.32 (d, $J = 8.5$ Hz, 1H, ArH), 7.51-7.54 (m, 2H, ArH), 7.57 (dd, $J = 8.8, 1.9$ Hz, 1H, ArH), 8.22 (d, $J = 1.9$ Hz, 1H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 29.5, 39.3, 107.6, 110.0, 112.3, 118.1, 121.3, 123.8, 124.4, 127.5, 127.9, 128.5, 129.1, 129.5, 131.2, 134.5, 136.8, 137.3, 137.4, 138.3, 138.7, 140.0, 141.5, 152.5, 194.9; MS (m/z , %): 478 (M^+ , 100). Anal. Calcd for $\text{C}_{29}\text{H}_{20}\text{NOBr}$ (478.36): C, 72.81; H, 4.21; N, 2.92%. Found: C, 72.76; H, 4.27; N, 2.85%.

9-Bromo-2-(3,4-methylenedioxybenzoyl)-3-(3,4-methylenedioxyphenyl)-6-*N*-methyl-1*H*-cyclopenta[*c*]carbazole (3i). Yield 68% (0.19 g). Yellow crystals, mp 231-232 °C; R_f 0.44 (3.0:1.0 hexane-EtOAc); IR(KBr): 2900, 1599, 1482, 1442, 1244, cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 3.84 (s, 3H, NCH_3), 4.31 (s, 2H, CH_2), 5.90 (s, 2H, OCH_2O), 5.91

(s, 2H, OCH₂O), 6.56 (d, J = 8.0 Hz, 1H, ArH) 6.83 (d, J = 7.8 Hz, 1H, ArH), 6.78 (d, J = 1.5 Hz, 1H, ArH), 6.80-6.81 (m, 1H, ArH), 7.12 (d, J = 1.7 Hz, 1H, ArH), 7.18 (dd, J = 8.2, 1.7 Hz, 1H, ArH), 7.28 (d, J = 10.8 Hz, 1H, ArH), 7.34 (d, J = 8.6 Hz, 1H, ArH), 7.56 (d, J = 1.7 Hz, 1H, ArH), 7.59 (d, J = 8.6 Hz, 1H, ArH) 8.21 (d, J = 1.9, 1H, ArH); ¹³C NMR (100 MHz, CDCl₃): δ 29.5, 39.5, 101.0, 101.4, 107.2, 107.5, 108.2, 109.0, 109.7, 110.0, 112.3, 118.2, 120.9, 123.5, 123.8, 124.4, 125.6, 128.5, 128.6, 133.1, 136.5, 137.3, 138.0, 140.0, 141.4, 147.2, 147.3, 147.4, 150.4, 150.5, 193.4; MS (m/z , %): 566 (M^+ , 100). Anal. Calcd for C₃₁H₂₀NO₃Br (566.38): C, 65.73; H, 3.55; N, 2.47%. Found: C, 65.68; H, 3.61; N, 2.54%.

2-Benzoyl-9-methoxy-6-*N*-methyl-3-phenyl-1*H*-cyclopenta[*c*]carbazole (3j). Yield 68% (0.15 g). Yellow crystals, mp 101-102 °C; R_f 0.78 (3.0:1.0 hexane-EtOAc); IR(KBr): 3058, 2929, 1615, 1485, 1351 cm⁻¹; ¹H NMR (400 MHz, CDCl₃): δ 3.86 (s, 3H, OCH₃), 3.98 (s, 3H, NCH₃), 4.46 (s, 2H, CH₂), 7.05 (t, J = 7.6 Hz, 2H, ArH), 7.14 (dd, J = 5.1, 1.7 Hz, 2H, ArH), 7.16-7.19 (m, 3H, ArH), 7.24-7.27 (m, 2H, ArH), 7.32 (d, J = 8.6 Hz, 1H, ArH), 7.35 (d, J = 8.8 Hz, 1H, ArH), 7.50-7.53 (m, 3H, ArH), 7.65 (d, J = 2.4 Hz, 1H, ArH); ¹³C NMR (100 MHz, CDCl₃): δ 29.5, 39.7, 56.3, 104.9, 107.5, 109.4, 115.1, 119.0, 120.6, 122.6, 127.4, 127.8, 127.9, 129.1, 129.6, 131.0, 134.8, 136.0, 136.5, 136.9, 138.4, 138.9, 141.9, 153.2, 154.2, 195.1; MS (m/z , %): 429 (M^+ , 18.9), 324 (65.7), 186 (100). Anal. Calcd for C₃₀H₂₃NO₂ (429.48): C, 83.89; H, 5.39; N, 3.26%. Found: C, 86.76; H, 5.46; N, 3.19%.

9-Methoxy-2-(4-methoxybenzoyl)-3-(4-methoxyphenyl)-6-*N*-methyl-1*H*-cyclopenta[*c*]carbazole (3k). Yield 63% (0.15 g). Yellow crystals, mp 216-217 °C; R_f 0.60 (3.0:1.0 hexane-EtOAc); IR(KBr): 2934, 1602, 1487, 1350, 1247 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 3.73 (s, 3H, OCH_3), 3.74 (s, 3H, OCH_3), 3.85 (s, 3H, OCH_3), 3.97 (s, 3H, NCH_3), 4.41 (s, 2H, CH_2), 6.60 (d, $J = 8.6$ Hz, 2H, ArH), 6.73 (d, $J = 8.6$ Hz, 2H, ArH), 7.16 (dd, $J = 8.9, 2.2$ Hz, 1H, ArH), 7.25 (d, $J = 8.6$ Hz, 2H, ArH), 7.33 (t, $J = 8.5$ Hz, 2H, ArH), 7.57 (d, $J = 8.5$ Hz, 3H, ArH), 7.63 (d, $J = 2.4$ Hz, 1H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 29.5, 39.5, 55.2, 55.3, 56.3, 104.9, 107.3, 109.3, 112.8, 113.5, 115.0, 119.0, 120.3, 122.6, 127.3, 130.9, 131.4, 131.5, 136.0, 136.5, 136.7, 138.2, 141.6, 151.0, 154.1, 159.3, 162.1, 194.1; MS (m/z , %): 490 (M^+ , 100). Anal. Calcd for $\text{C}_{32}\text{H}_{27}\text{NO}_4$ (489.54): C, 78.50; H, 5.56; N, 2.86%. Found: C, 78.47; H, 5.48; N, 2.89%.

2-Benzoyl-6-*N*-benzyl-3-phenyl-1*H*-cyclopenta[*c*]carbazole (3m). Yield 54% (0.13 g). Yellow crystals, mp 179-180 °C; R_f 0.45 (8.5:1.5 hexane-EtOAc); IR(KBr): 3048, 1601, 1479, 1446, 1346, cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 4.51 (s, 2H, CH_2), 5.54 (s, 2H, CH_2), 7.08 (t, $J = 7.8$ Hz, 2H, ArH), 7.12-7.17 (m, 3H, ArH), 7.20-7.28 (m, 7H, ArH), 7.33 (d, $J = 8.5$ Hz, 1H, ArH), 7.37 (t, $J = 7.6$ Hz, 1H, ArH), 7.43 (d, $J = 8.08$ Hz, 1H, ArH), 7.48-7.55 (m, 5H, ArH), 8.25 (d, $J = 7.8$ Hz, 1H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 39.5, 46.8, 107.9, 109.1, 119.5, 119.9, 120.8, 122.2, 122.5, 126.1, 126.3, 127.4, 127.5, 127.9, 128.7, 129.0, 129.1, 129.6, 131.1, 134.7, 136.7, 136.8, 137.3, 138.4, 138.8, 140.9, 141.1, 152.8, 195.1; MS (m/z , %): 475 (M^+ , 100). Anal. Calcd for $\text{C}_{35}\text{H}_{25}\text{NO}$ (475.56): C, 88.39; H, 5.30; N, 2.95%. Found: C, 88.27; H, 5.36; N, 2.88%.

6-Bromo-3-(4-methoxybenzoyl)-9-*N*-methyl-1-(5-bromo-1-*N*-methyl-3-indolyl)-4-[2'-(4-methoxybenzoyl)-ethyl]-1,2,3,4-tetrahydrocarbazole (7h). Yield 72% (0.27 g). Pale yellow solid, mp 206-207 °C; R_f 0.30 (3.0:1.0 hexane-EtOAc); IR(KBr): 3062, 2927, 1671, 1598, 1507, 1253 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 2.16-2.30 (m, 2H, CH_2), 2.66-2.78 (m, 2H, CH_2), 3.01-3.07 (m, 2H, CH_2), 3.30 (s, 3H, OCH_3), 3.53-3.54 (m, 1H, CH), 3.55 (s, 3H, OCH_3), 3.74 (s, 3H, NCH_3), 3.84 (s, 3H, NCH_3), 3.92-3.94 (m, 1H, CH), 4.37 (t, $J = 4.6$ Hz, 1H, CH), 6.00 (brs, 1H, ArH), 6.51 (d, $J = 8.5$ Hz, 2H, ArH), 6.90 (t, $J = 8.6$ Hz, 3H, ArH), 7.10 (d, $J = 8.3$ Hz, 2H, ArH), 7.26 (dd, $J = 8.5, 1.2$ Hz, 2H, ArH), 7.32-7.35 (m, 2H, ArH), 7.86 (d, $J = 8.6$ Hz, 3H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 29.5, 29.6, 29.9, 32.0, 32.7, 32.8, 36.7, 45.1, 55.3, 55.4, 110.2, 110.6, 112.1, 112.3, 112.8, 112.9, 113.6, 113.7, 120.9, 121.8, 123.8, 124.0, 127.9, 128.2, 128.7, 129.4, 129.8, 129.9, 130.3, 135.6, 136.2, 136.4, 162.3, 163.3, 198.8, 200.3; MS (m/z , %): 769 (M^+ , 66), 618 (70), 590 (45). Anal. Calcd for $\text{C}_{40}\text{H}_{36}\text{N}_2\text{O}_4\text{Br}_2$ (768.53): C, 62.51; H, 4.72; N, 3.64%. Found: C, 62.47; H, 4.79; N, 3.71%.

1-Phenyl-2-(1-*N*-benzyl-3-indolyl)cyclopropyl ketone (2m). Yield 99% (0.33 g). Pale yellow crystals, m.p 121-122 °C; R_f 0.70 (3:1 hexane-EtOAc); IR(KBr): 3048, 2927, 1655, 1456, 1351 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 1.63-1.67(m, 1H, CH), 1.96-2.00 (m, 1H, CH), 2.89-2.95 (m, 2H, CH), 5.28 (s, 2H, CH_2), 6.98 (s, 1H, ArH), 7.12-7.35(m, 8H, ArH), 7.48 (t, $J = 7.6$ Hz, 2H, ArH), 7.58 (t, $J = 7.6$ Hz, 1H, ArH), 7.68 (d, $J = 7.8$ Hz, 1H, ArH), 8.07-8.09 (m, 2H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 17.7, 22.5, 27.8, 49.8, 109.8, 115.4, 119.0, 119.4, 122.1, 125.1, 126.7, 127.6, 127.9, 128.1, 128.4, 128.7, 132.7, 135.7, 137.2, 137.8, 199.1; MS (m/z , %): 352 (M^+ , 100). Anal. Calcd for $\text{C}_{25}\text{H}_{21}\text{NO}$ (351.43): C, 85.44; H, 6.02; N, 3.99%. Found: C, 85.38; H, 6.17; N, 3.88%.

2-(3,4-Methylenedioxybenzoyl)-3-(3,4-methylenedioxyphenyl)-6-*N*-methyl-1*H*-cyclopenta[*c*]carbazole (3d). Yield 63% (0.15 g). Pale Yellow crystals, mp 192-193 °C; R_f 0.70 (3.0:1.0 hexane-EtOAc); IR(KBr): 3058, 2908, 2358, 1599, 1486, 1442, 1246 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 3.85 (s, 3H, NCH_3), 4.36 (s, 2H, CH_2), 5.90 (s, 2H, OCH_2O), 5.91 (s, 2H, OCH_2O), 6.55 (d, $J = 8.0$ Hz, 1H, ArH), 6.69 (d, $J = 8.0$ Hz, 1H, ArH), 6.81 (dd, $J = 7.8, 1.7$ Hz, 1H, ArH), 6.83 (d, $J = 1.5$ Hz, 1H, ArH), 7.12 (d, $J = 1.4$ Hz, 1H, ArH), 7.18 (dd, $J = 8.1, 1.7$ Hz, 1H, ArH), 7.29 (d, $J = 7.5$ Hz, 1H, ArH), 7.33 (d, $J = 8.6$ Hz, 1H, ArH), 7.43 (d, $J = 8.4$ Hz, 1H, ArH), 7.51 (t, $J = 7.8$ Hz, 1H, ArH), 7.57 (d, $J = 8.6$, 1H, ArH), 8.14 (d, $J = 7.8$ Hz, 1H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 29.3, 39.5, 101.0, 101.3, 107.2, 107.3, 108.1, 108.6, 109.0, 109.7, 119.1, 119.5, 120.2, 121.9, 122.2, 123.5, 125.5, 125.8, 128.7, 133.2, 136.1, 137.0, 138.0, 141.1, 141.4, 147.1, 147.2, 147.3, 150.3, 150.9, 193.5; MS (m/z , %): 487 (M^+ , 26.6), 339 (32.5), 338 (100). Anal. Calcd for $\text{C}_{31}\text{H}_{21}\text{NO}_5$ (487.48): C, 76.37; H, 4.34; N, 2.87%. Found: C, 76.27; H, 4.38; N, 2.56%.

6-*N*-Methyl-2-(2-thienoyl)-3-(2-thienyl)-1*H*-cyclopenta[*c*]carbazole (3f). Yield 68% (0.14 g). Bright yellow crystals, mp 169-170 °C; R_f 0.65 (8.5:1.5 hexane-EtOAc); IR(KBr): 3101, 2925, 1599, 1484, 1418, 1322 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 3.82 (s, 3H, NCH_3), 4.35 (s, 2H, CH_2), 6.83 (dd, $J = 4.9, 3.7$ Hz, 1H, ArH), 6.98 (dd, $J = 5.0, 3.4$ Hz, 1H, ArH), 7.22 (dd, $J = 3.5, 1.2$ Hz, 1H, ArH), 7.28 (d, $J = 7.1$ Hz, 1H, ArH), 7.32 (dd, $J = 5.1, 1.2$ Hz, 1H, ArH), 7.34 (t, $J = 1.2$ Hz, 1H, ArH), 7.36 (t, $J = 1.2$ Hz, 1H, ArH), 7.41 (d, $J = 8.0$ Hz, 1H, ArH), 7.47 (dd, $J = 5.0, 0.9$ Hz, 1H, ArH), 7.51 (t, $J = 7.6$ Hz, 1H, ArH), 7.82 (d, $J = 8.3$ Hz, 1H, ArH), 8.07 (d, $J = 7.6$ Hz, 1H, ArH); ^{13}C NMR (100 MHz, CDCl_3): δ 29.3, 39.90, 107.3, 108.6, 119.0, 119.5, 120.1, 121.8, 122.0, 125.9, 126.9, 127.2, 127.4, 128.7, 132.9, 133.1, 135.4, 135.5, 137.4, 137.9, 141.1, 141.4, 142.3, 144.7, 186.5; MS (m/z , %): 410 ($M+1$ 4.3), 409 ($M+2$, 16.6), 298 (100). Anal. Calcd for $\text{C}_{25}\text{H}_{17}\text{NOS}_2$ (411.51): C, 72.96; H, 4.16; N, 3.40%. Found: C, 72.84; H, 4.09; N, 3.46%.

3-Benzoyl-9-*N*-benzyl-1-(1-*N*-benzyl-3-indolyl)-4-[2'-(benzoyl)-ethyl]-1,2,3,4-tetrahydrocarbazole (7m). Yield 72% (0.25 g). Colorless solid, mp 174-175 °C; R_f 0.50 (8.5:1.5 hexane-EtOAc); IR(KBr): 3056, 2924, 1683, 1456, 1350 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3): δ 2.21 (ddd, $J = 12.3, 12.1, 4.4$ Hz, 1H, CH), 2.35-2.41 (m, 2H, CH_2), 2.56 (d, $J = 12.9$ Hz, 1H, CH), 2.71-2.77 (m, 2H, CH_2), 3.80-3.82 (m, 1H, CH), 4.09-4.11 (m, 1H, CH), 4.55 (brs, 1H, CH), 5.10 (d, $J = 17.1$ Hz, 2H, $\text{CH}_2\text{-Ar}$), 5.23 (t, $J = 15.2$ Hz, 2H, $\text{CH}_2\text{-Ar}$), 6.64 (s, 1H, ArH), 6.83 (dd, $J = 5.8, 2.4$ Hz, 2H, ArH), 6.99 (d, $J = 6.6$ Hz, 2H, ArH), 7.05 (t, $J = 8.3$ Hz, 2H, ArH), 7.11 (t, $J = 7.3$ Hz, 2H, ArH), 7.15 (dd, $J = 7.8, 1.9$ Hz, 2H, ArH), 7.18-7.24 (m, 10H, ArH), 7.33 (d, $J = 8.3$ Hz, 1H, ArH), 7.36-7.40 (m, 1H, ArH), 7.43 (t, $J = 7.3$ Hz, 2H, ArH), 7.52 (d, $J = 6.6$ Hz, 1H, ArH), 7.57 (dd, $J = 8.3, 1.2$ Hz, 2H, ArH), 7.78 (dd, $J = 7.1, 1.2$ Hz, 1H, ArH); ^{13}C NMR (100 MHz,

CDCl₃): δ 27.9, 30.14, 34.2, 34.6, 35.2, 43.5, 46.4, 49.9, 109.6, 110.1, 112.0, 116.7, 119.1, 119.4, 119.6, 119.8, 121.4, 122.3, 125.9, 126.2, 126.5, 126.6, 127.1, 127.6, 127.8, 127.9, 128.1, 128.3, 128.4, 128.6, 128.7, 132.6, 132.8, 135.9, 136.6, 136.8, 137.1, 137.34, 137.4, 137.91, 200.0, 202.0; MS (*m/z*, %): 703 (M⁺, 89), 582 (56), 496 (78), 477 (100).
Anal. Calcd for C₅₀H₄₂N₂O₂ (702.86): C, 85.43; H, 6.02; N, 3.98%. Found: C, 85.46; H, 6.04; N, 3.92%.

Figure S1. X-Ray Crystallographic Structure of 2-(4-Methoxybenzoyl)-3-(4-methoxyphenyl)-6-*N*-methyl-1*H*-cyclopenta[*c*]carbazole (3a).

Table S1. Crystal Data and Structure Refinement for 2-(4-Methoxybenzoyl)-3-(4-methoxyphenyl)-6-*N*-methyl-1*H*-cyclopenta[*c*]carbazole (3a).

Identification code	shelxs1619	
Empirical formula	C ₃₁ H ₂₅ NO ₃	
Formula weight	459.52	
Temperature	293(2) K	
Wavelength	0.71073 Å	
Crystal system	Monoclinic	
Space group	P(2) ₁ /C	
Unit cell dimensions	a = 10.292(2) Å	a = 90°.
	b = 28.840(6) Å	b = 106.82(3)°.
	c = 8.319(2) Å	g = 90°.
Volume	2363.6(9) Å ³	
Z	4	
Density (calculated)	1.291 Mg/m ³	
Absorption coefficient	0.083 mm ⁻¹	
F(000)	968	
Crystal size	? x ? x ? mm ³	
Theta range for data collection	2.07 to 23.95°.	
Index ranges	-11 ≤ h ≤ 11, -32 ≤ k ≤ 32, -8 ≤ l ≤ 8	
Reflections collected	10657	
Independent reflections	3342 [R(int) = 0.0966]	
Completeness to theta = 23.95°	90.6 %	
Refinement method	Full-matrix least-squares on F ²	
Data / restraints / parameters	3342 / 0 / 316	
Goodness-of-fit on F ²	1.057	
Final R indices [I > 2σ(I)]	R1 = 0.0721, wR2 = 0.1565	
R indices (all data)	R1 = 0.1130, wR2 = 0.1754	
Largest diff. peak and hole	0.292 and -0.201 e.Å ⁻³	

Table S2. Atomic Coordinates ($\times 10^4$) and Equivalent Isotropic Displacement Parameters ($\text{\AA}^2 \times 10^3$) for 2-(4-Methoxybenzoyl)-3-(4-methoxyphenyl)-6-*N*-methyl-1*H*-cyclopenta[*c*]carbazole (3a). U(eq) is defined as one third of the trace of the orthogonalized U^{ij} tensor.

	x	y	z	U(eq)
O(1)	1911(3)	4958(1)	6365(4)	64(1)
O(2)	-1470(3)	4429(1)	-1417(4)	82(1)
O(3)	-633(3)	2523(1)	2492(4)	83(1)
N(1)	6247(3)	1769(1)	8419(4)	51(1)
C(1)	5653(3)	1368(1)	7581(5)	44(1)
C(2)	6052(4)	910(1)	7881(5)	56(1)
C(3)	5295(4)	573(1)	6822(6)	58(1)
C(4)	4165(4)	696(1)	5489(6)	58(1)
C(5)	3760(3)	1152(1)	5183(5)	48(1)
C(6)	4493(3)	1499(1)	6251(4)	40(1)
C(7)	4375(3)	1994(1)	6311(5)	41(1)
C(8)	3436(3)	2330(1)	5451(5)	41(1)
C(9)	2105(3)	2278(1)	4119(5)	43(1)
C(10)	1571(3)	2767(1)	3832(5)	40(1)
C(11)	2469(3)	3067(1)	4874(5)	43(1)
C(12)	3657(3)	2798(1)	5870(5)	43(1)
C(13)	4808(3)	2944(1)	7158(5)	53(1)
C(14)	5736(4)	2620(1)	8054(5)	57(1)
C(15)	5493(3)	2156(1)	7651(5)	46(1)
C(16)	188(3)	2844(1)	2680(5)	47(1)
C(17)	-221(3)	3281(1)	1698(5)	43(1)
C(18)	693(3)	3591(1)	1347(5)	47(1)
C(19)	252(4)	3967(1)	328(5)	57(1)
C(20)	-1136(4)	4048(1)	-387(5)	55(1)
C(21)	-2063(4)	3748(1)	-29(5)	56(1)
C(22)	-1599(3)	3372(1)	994(5)	52(1)
C(23)	-2872(5)	4536(2)	-2152(7)	103(2)
C(24)	2283(3)	3561(1)	5221(5)	41(1)

C(25)	3218(4)	3904(1)	5086(5)	53(1)
C(26)	3065(4)	4356(1)	5461(5)	54(1)
C(27)	1971(3)	4498(1)	6022(5)	47(1)
C(28)	1025(3)	4163(1)	6174(5)	45(1)
C(29)	1192(3)	3707(1)	5775(5)	43(1)
C(30)	1005(4)	5103(1)	7265(6)	68(1)
C(31)	7447(4)	1783(2)	9881(6)	69(1)

Table S3. Bond lengths [Å] and Angles [°] for 2-(4-Methoxybenzoyl)-3-(4-methoxyphenyl)-6-*N*-methyl-1*H*-cyclopenta[*c*]carbazole (3a).

O(1)-C(27)	1.363(4)
O(1)-C(30)	1.418(5)
O(2)-C(20)	1.374(5)
O(2)-C(23)	1.428(5)
O(3)-C(16)	1.232(4)
N(1)-C(1)	1.395(4)
N(1)-C(15)	1.404(4)
N(1)-C(31)	1.462(4)
C(1)-C(2)	1.386(5)
C(1)-C(6)	1.424(5)
C(2)-C(3)	1.388(5)
C(3)-C(4)	1.401(5)
C(4)-C(5)	1.379(5)
C(5)-C(6)	1.406(5)
C(6)-C(7)	1.435(5)
C(7)-C(8)	1.409(5)
C(7)-C(15)	1.429(5)
C(8)-C(12)	1.395(5)
C(8)-C(9)	1.499(5)
C(9)-C(10)	1.507(4)
C(10)-C(11)	1.374(5)
C(10)-C(16)	1.485(5)
C(11)-C(24)	1.479(5)
C(11)-C(12)	1.482(5)
C(12)-C(13)	1.412(5)
C(13)-C(14)	1.389(5)
C(14)-C(15)	1.385(5)
C(16)-C(17)	1.493(5)
C(17)-C(22)	1.394(5)
C(17)-C(18)	1.389(5)
C(18)-C(19)	1.371(5)
C(19)-C(20)	1.399(5)

C(20)-C(21)	1.383(5)
C(21)-C(22)	1.376(5)
C(24)-C(29)	1.397(5)
C(24)-C(25)	1.407(5)
C(25)-C(26)	1.360(5)
C(26)-C(27)	1.398(5)
C(27)-C(28)	1.403(5)
C(28)-C(29)	1.378(5)

C(27)-O(1)-C(30)	118.4(3)
C(20)-O(2)-C(23)	118.6(4)
C(1)-N(1)-C(15)	109.1(3)
C(1)-N(1)-C(31)	125.6(3)
C(15)-N(1)-C(31)	125.3(3)
C(2)-C(1)-N(1)	129.5(3)
C(2)-C(1)-C(6)	122.1(3)
N(1)-C(1)-C(6)	108.5(3)
C(1)-C(2)-C(3)	118.0(3)
C(2)-C(3)-C(4)	120.7(3)
C(5)-C(4)-C(3)	121.6(4)
C(4)-C(5)-C(6)	119.0(3)
C(5)-C(6)-C(1)	118.5(3)
C(5)-C(6)-C(7)	134.2(3)
C(1)-C(6)-C(7)	107.3(3)
C(8)-C(7)-C(15)	116.8(3)
C(8)-C(7)-C(6)	136.0(3)
C(15)-C(7)-C(6)	107.1(3)
C(12)-C(8)-C(7)	119.9(3)
C(12)-C(8)-C(9)	109.3(3)
C(7)-C(8)-C(9)	130.7(3)
C(8)-C(9)-C(10)	103.7(3)
C(11)-C(10)-C(16)	131.1(3)
C(11)-C(10)-C(9)	109.9(3)
C(16)-C(10)-C(9)	118.7(3)
C(10)-C(11)-C(24)	128.9(3)

C(10)-C(11)-C(12)	108.6(3)
C(24)-C(11)-C(12)	121.9(3)
C(8)-C(12)-C(13)	121.3(3)
C(8)-C(12)-C(11)	108.5(3)
C(13)-C(12)-C(11)	130.0(3)
C(14)-C(13)-C(12)	120.1(3)
C(15)-C(14)-C(13)	118.2(3)
C(14)-C(15)-N(1)	128.4(3)
C(14)-C(15)-C(7)	123.5(3)
N(1)-C(15)-C(7)	108.0(3)
O(3)-C(16)-C(10)	117.6(3)
O(3)-C(16)-C(17)	119.3(3)
C(10)-C(16)-C(17)	123.1(3)
C(22)-C(17)-C(18)	117.3(3)
C(22)-C(17)-C(16)	118.7(3)
C(18)-C(17)-C(16)	123.8(3)
C(19)-C(18)-C(17)	121.1(3)
C(18)-C(19)-C(20)	120.6(4)
O(2)-C(20)-C(21)	124.8(3)
O(2)-C(20)-C(19)	116.0(3)
C(21)-C(20)-C(19)	119.2(4)
C(22)-C(21)-C(20)	119.3(3)
C(21)-C(22)-C(17)	122.5(3)
C(29)-C(24)-C(25)	116.6(3)
C(29)-C(24)-C(11)	121.2(3)
C(25)-C(24)-C(11)	122.1(3)
C(26)-C(25)-C(24)	121.8(3)
C(25)-C(26)-C(27)	121.0(3)
O(1)-C(27)-C(26)	116.4(3)
O(1)-C(27)-C(28)	125.2(3)
C(26)-C(27)-C(28)	118.4(3)
C(29)-C(28)-C(27)	119.8(3)
C(28)-C(29)-C(24)	122.4(3)

Symmetry transformations used to generate equivalent atoms:

Table S4. Anisotropic Displacement Parameters ($\text{\AA}^2 \times 10^3$) for 2-(4-Methoxybenzoyl)-3-(4-methoxyphenyl)-6-*N*-methyl-1*H*-cyclopenta[*c*]carbazole (3a). The Anisotropic Displacement Factor Exponent takes the form: $-2p^2 [h^2 a^{*2} U^{11} + \dots + 2 h k a^* b^* U^{12}]$

	U ¹¹	U ²²	U ³³	U ²³	U ¹³	U ¹²
O(1)	62(2)	47(2)	81(2)	-13(1)	20(2)	-4(1)
O(2)	74(2)	81(2)	90(3)	30(2)	20(2)	20(2)
O(3)	52(2)	63(2)	113(3)	16(2)	-12(2)	-20(1)
N(1)	26(2)	68(2)	56(2)	-7(2)	6(1)	3(1)
C(1)	28(2)	60(2)	45(3)	-3(2)	13(2)	1(2)
C(2)	37(2)	71(3)	59(3)	7(2)	12(2)	10(2)
C(3)	42(2)	55(2)	76(3)	5(2)	14(2)	8(2)
C(4)	46(2)	51(2)	72(3)	-4(2)	9(2)	0(2)
C(5)	33(2)	51(2)	58(3)	-2(2)	9(2)	0(2)
C(6)	27(2)	55(2)	40(2)	0(2)	11(2)	2(2)
C(7)	25(2)	56(2)	45(3)	-6(2)	13(2)	-2(2)
C(8)	31(2)	53(2)	41(2)	-4(2)	14(2)	-2(2)
C(9)	34(2)	48(2)	46(3)	-4(2)	10(2)	-5(2)
C(10)	35(2)	45(2)	41(2)	-4(2)	14(2)	-5(2)
C(11)	36(2)	48(2)	48(3)	-2(2)	20(2)	-2(2)
C(12)	33(2)	54(2)	44(3)	-7(2)	13(2)	-1(2)
C(13)	42(2)	55(2)	62(3)	-17(2)	15(2)	-7(2)
C(14)	35(2)	69(3)	64(3)	-17(2)	9(2)	-6(2)
C(15)	28(2)	61(2)	50(3)	-9(2)	12(2)	-1(2)
C(16)	38(2)	51(2)	51(3)	-5(2)	12(2)	-8(2)
C(17)	33(2)	48(2)	46(3)	-6(2)	9(2)	-3(2)
C(18)	37(2)	57(2)	49(3)	-2(2)	13(2)	3(2)
C(19)	44(2)	59(2)	70(3)	9(2)	19(2)	0(2)
C(20)	56(2)	61(2)	50(3)	4(2)	17(2)	11(2)
C(21)	40(2)	72(3)	51(3)	2(2)	4(2)	7(2)
C(22)	40(2)	64(2)	49(3)	-6(2)	11(2)	-7(2)
C(23)	86(4)	114(4)	100(5)	38(3)	13(3)	42(3)
C(24)	35(2)	48(2)	41(2)	-3(2)	11(2)	-6(2)

C(25)	41(2)	53(2)	72(3)	-5(2)	26(2)	-8(2)
C(26)	45(2)	51(2)	70(3)	-1(2)	22(2)	-14(2)
C(27)	39(2)	46(2)	51(3)	-3(2)	5(2)	-5(2)
C(28)	31(2)	52(2)	51(3)	-2(2)	9(2)	3(2)
C(29)	27(2)	50(2)	48(3)	-1(2)	7(2)	-6(2)
C(30)	77(3)	52(2)	68(3)	-13(2)	11(2)	5(2)
C(31)	37(2)	102(3)	55(3)	-10(2)	-7(2)	4(2)