
Supporting Information

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1. General Information

Unless otherwise specified, all reactions were carried out under a nitrogen atmosphere in anhydrous conditions. All the solvents were purified according to the standard procedures. All chemicals which are commercially available were used without further purification unless otherwise noted. Thin-layer chromatography (TLC) was performed on silica gel plates (60F-254) using UV-light (254 and 365 nm). Flash chromatography was conducted on silica gel (200–300 mesh). $^1$H and $^{13}$C NMR spectra were recorded at ambient temperature in CDCl$_3$ on a Bruker AMX400 MHz spectrometer. Chemical shifts were reported in parts per million (ppm). All high resolution mass spectra were obtained on a Finnigan/MAT 95XL-T spectrometer. Optical rotations were measured using a Jasco DIP-1000 polarimeter. Enantiomeric excesses were determined by HPLC analysis on a chiral stationary phase. MBH carbonates 1 were synthesized according to literature reported procedures, and pyrazoloneylidene oxindoles 2 were synthesized according to literature reported procedures.

2. Representative Procedure

To a dried round bottle flask with a magnetic stirring bar under N$_2$ at room temperature were added MBH carbonates 1 (0.1 mmol) and pyrazoloneylidene oxindoles 2 (0.12 mmol), followed by the addition of anhydrous toluene (0.5 mL) and K$_2$CO$_3$ (0.02 mmol). Catalyst P6 (0.02 mmol, 7.1 mg) was then introduced, and the reaction mixture was stirred for 2-12 hours at 60 °C. The solvent was then removed under reduced pressure and the residue was purified by flash column chromatography (hexane/ethyl acetate = 7:1) on silica gel to afford products.
3. Analytical Data of the Products

methyl (2'S,3R,5'R)-1,1''-dibenzyl-3''-methyl-2,5''-dioxo-5'-phenyl-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4'-carboxylate (3a)

White solid, 55.2 mg, 95% yield, [α]D25 = 396 (c = 1.0 CHCl3). 1H NMR (400 MHz, CDCl3) δ 7.79 (dd, J = 7.6, 0.8 Hz, 1H), 7.25 – 7.16 (m, 4H), 7.12 (t, J = 7.7 Hz, 4H), 7.04 (t, J = 7.4 Hz, 2H), 7.01 – 6.93 (m, 3H), 6.91 (s, 1H), 6.89 (s, 1H), 6.75 (d, J = 2.6 Hz, 1H), 6.36 (d, J = 7.7 Hz, 1H), 6.31 (s, 1H), 6.29 (s, 1H), 5.55 (d, J = 2.6 Hz, 1H), 4.99 (d, J = 15.8 Hz, 1H), 4.83 (d, J = 15.2 Hz, 1H), 4.61 (d, J = 15.3 Hz, 1H), 4.17 (d, J = 15.9 Hz, 1H), 3.70 (s, 3H), 2.01 (s, 3H). 13C NMR (101 MHz, CDCl3) δ 172.6, 172.1, 164.2, 157.4, 143.6, 143.1, 138.7, 135.6, 135.1, 134.4, 129.6, 129.2, 128.6, 128.5, 127.9, 127.8, 127.6, 127.3, 127.2, 126.4, 125.5, 124.3, 123.1, 109.2, 69.7, 65.5, 56.4, 51.8, 47.9, 43.1, 17.6. HRMS (ESI-TOF) m/z [M + H]+ calcd for C37H32N3O4 582.2387, found 582.2398. HPLC (Chiralpak IA, i-PrOH/hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t_major = 27.8 min, t_minor = 33.0 min, ee = 95%.

methyl (2'S,3R,5'R)-1,1''-dibenzyl-3''-methyl-2,5''-dioxo-5'-(p-tolyl)-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4'-carboxylate (3b)

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White solid, 45.8 mg, 77% yield, [α]D25 = 247 (c = 1.0 CHCl3). 1H NMR (400 MHz, CDCl3) δ 7.78 (dd, J = 7.6, 0.7 Hz, 1H), 7.23 – 7.16 (m, 3H), 7.15 – 7.06 (m, 2H), 7.03 (t, J = 7.5 Hz, 2H), 7.00 – 6.94 (m, 3H), 6.93 (s, 1H), 6.91 (s, 1H), 6.80 (s, 1H), 6.78 (s, 1H), 6.72 (d, J = 2.6 Hz, 1H), 6.34 (t, J = 6.7 Hz, 3H), 5.51 (d, J = 2.6 Hz, 1H), 5.04 (d, J = 15.9 Hz, 1H), 4.82 (d, J = 15.3 Hz, 1H), 4.60 (d, J = 15.9 Hz, 1H), 4.17 (d, J = 15.9 Hz, 1H), 3.71 (s, 3H), 2.30 (s, 3H), 2.01 (s, 3H). 13C NMR (101 MHz, CDCl3) δ 172.7, 172.1, 164.2, 157.5, 143.8, 143.0, 138.5, 136.8, 135.7, 134.5, 131.9, 129.5, 129.1, 128.5, 128.5, 128.5, 127.9, 127.5, 127.2, 126.5, 125.5, 124.4, 123.1, 109.2, 69.7, 65.5, 56.1, 51.8, 47.9, 43.1, 21.3, 17.6. HRMS (ESI-TOF) m/z [M + H]+ calcld for C38H34N3O4 596.2544, found 596.2554. HPLC (Chiralpak IA, i-PrOH/hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t_major = 20.3 min, t_minor = 10.3 min, ee = 93%.

methyl (2'S,3R,5'R)-1,1''-dibenzyl-5''-(4-methoxyphenyl)-3''-methyl-2,5''-dioxo-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4'-carboxylate (3c)

White solid, 46.4 mg, 76% yield, [α]D25 = 483 (c = 1.0 CHCl3). 1H NMR (400 MHz, CDCl3) δ 7.78 (dd, J = 7.6, 0.8 Hz, 1H), 7.23 – 7.16 (m, 3H), 7.15 – 7.09 (m, 2H), 7.05 (t, J = 7.4 Hz, 2H), 7.01 – 6.92 (m, 3H), 6.82 (s, 1H), 6.80 (s, 1H), 6.72 (d, J = 2.6 Hz, 1H), 6.66 (s, 1H), 6.64 (s, 1H), 6.38 (d, J = 7.7 Hz, 1H), 6.33 (s, 1H), 6.32 (s, 1H), 5.50 (d, J = 2.6 Hz, 1H), 5.05 (d, J = 15.9 Hz, 1H), 4.82 (d, J = 15.3 Hz, 1H), 4.61 (d, J = 15.3 Hz, 1H), 4.18 (d, J = 15.9 Hz, 1H), 3.73 (s, 3H), 3.71 (s, 3H), 2.01 (s, 3H). 13C NMR (101 MHz, CDCl3) δ 172.8, 172.1, 164.2, 158.9, 157.5, 143.7, 143.1, 138.5, 135.7, 134.4, 130.3, 129.5, 128.5, 128.5, 127.9, 127.6, 127.3,
127.1, 126.4, 125.5, 124.4, 123.1, 113.2, 109.2, 69.6, 65.5, 55.8, 54.9, 51.8, 47.9, 43.1, 17.6.

HRMS (ESI-TOF) m/z [M + H] + calcd for C_{38}H_{34}N_{3}O_{5} 612.2493, found 612.2502. HPLC (Chiralpak IF, i-PrOH/hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t_{major} = 40.7 min, t_{minor} = 18.8 min, ee = 92%.

**methyl (2'S,3R,5'R)-1,1''-dibenzyl-5''-(4-fluorophenyl)-3''-methyl-2,5''-dioxo-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4''-carboxylate (3d)**

White solid, 50.9 mg, 85% yield, [α]_D^25 = 324 (c = 1.0 CHCl₃). ¹H NMR (400 MHz, CDCl₃) δ 7.77 (dd, J = 7.6, 0.8 Hz, 1H), 7.23 – 7.06 (m, 7H), 7.01 – 6.93 (m, 3H), 6.86 (dd, J = 8.6, 5.5 Hz, 2H), 6.79 (t, J = 8.8 Hz, 2H), 6.75 (d, J = 2.6 Hz, 1H), 6.42 (d, J = 7.7 Hz, 1H), 6.38 (s, 1H), 6.36 (s, 1H), 5.51 (d, J = 2.6 Hz, 1H), 5.01 (d, J = 15.8 Hz, 1H), 4.82 (d, J = 15.2 Hz, 1H), 4.61 (d, J = 15.3 Hz, 1H), 4.20 (d, J = 15.8 Hz, 1H), 3.72 (s, 3H), 2.01 (s, 3H). ¹³C NMR (101 MHz, CDCl₃) δ 172.6, 171.9, 164.0, 157.3, 143.1, 143.1, 143.1 (d, J = 10.5 Hz), 139.0, 135.6, 134.3, 130.9, 130.8, 129.7, 128.6, 128.6, 127.9, 127.6, 127.6, 125.6, 125.4, 125.4, 124.1, 123.2, 114.8, 114.6, 109.3, 69.6, 65.4, 55.7, 51.9, 48.0, 43.2, 17.5. HRMS (ESI-TOF) m/z [M + H] + calcd for C_{37}H_{31}FN_{3}O_{4}^+ 600.2293, found 600.2320. HPLC (Chiralpak IF, i-PrOH/hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t_{major} = 23.4 min, t_{minor} = 11.1 min, ee = 90%.
White solid, 59.7 mg, 97% yield, [α] \textsubscript{D} \textsuperscript{25} = 302 (c = 1.0 CHCl\textsubscript{3}). \textsuperscript{1}H NMR (400 MHz, CDCl\textsubscript{3}) \textsuperscript{δ} 7.77 (dd, \textit{J} = 7.6, 0.6 Hz, 1H), 7.24 – 7.11 (m, 7H), 7.10 (s, 1H), 7.08 (s, 1H), 6.97 (dd, \textit{J} = 16.0, 7.5 Hz, 3H), 6.85 (s, 1H), 6.83 (s, 1H), 6.76 (d, \textit{J} = 2.6 Hz, 1H), 6.42 (d, \textit{J} = 7.8 Hz, 1H), 6.39 – 6.33 (m, 2H), 5.51 (d, \textit{J} = 2.6 Hz, 1H), 5.05 (d, \textit{J} = 15.8 Hz, 1H), 4.82 (d, \textit{J} = 15.2 Hz, 1H), 4.61 (d, \textit{J} = 15.2 Hz, 1H), 4.19 (d, \textit{J} = 15.8 Hz, 1H), 3.72 (s, 3H), 2.01 (s, 3H). \textsuperscript{13}C NMR (101 MHz, CDCl\textsubscript{3}) \textsuperscript{δ} 172.5, 171.9, 163.9, 157.2, 1423.0, 139.2, 135.6, 134.2, 133.6, 133.4, 130.6, 129.8, 128.7, 128.6, 128.0, 127.9, 127.6, 127.5, 126.3, 125.4, 123.9, 123.3, 109.3, 69.6, 65.3, 55.7, 51.9, 48.0, 43.3, 17.5. HRMS (ESI-TOF) m/z [M + H]\textsuperscript{+} calcd for C\textsubscript{37}H\textsubscript{31}ClN\textsubscript{3}O\textsubscript{4} \textsuperscript{+} 616.1998, found 616.1999. HPLC (Chiralpak IA, \textit{i}-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, \textit{λ} = 254 nm): \textit{t}_{\text{major}} = 27.0 min, \textit{t}_{\text{minor}} = 21.5 min, ee = 91%.
methyl (2'S,3R,5'R)-1,1''-dibenzyl-5''-(4-bromophenyl)-3''-methyl-2,5''-dioxo-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4'-carboxylate (3f)

White solid, 62 mg, 94% yield, [α] D 25 = 276 (c = 1.0 CHCl 3). 1H NMR (400 MHz, CDCl 3) δ 7.76 (dd, J = 7.6, 0.7 Hz, 1H), 7.26 – 7.10 (m, 9H), 7.01 – 6.91 (m, 3H), 6.79 (s, 1H), 6.77 (s, 1H), 6.76 (d, J = 2.6 Hz, 1H), 6.41 (d, J = 7.8 Hz, 1H), 6.37 (dd, J = 6.6, 2.7 Hz, 2H), 5.49 (d, J = 2.6 Hz, 1H), 5.05 (d, J = 15.8 Hz, 1H), 4.81 (d, J = 15.2 Hz, 1H), 4.60 (d, J = 15.3 Hz, 1H), 4.19 (d, J = 15.8 Hz, 1H), 3.72 (s, 3H), 2.00 (s, 3H). 13C NMR (101 MHz, CDCl 3) δ 172.5, 171.9, 163.9, 157.2, 143.0, 142.9, 139.3, 135.6, 134.3, 134.2, 130.9, 129.7, 128.8, 128.6, 127.9, 127.6, 127.5, 126.3, 125.4, 123.9, 123.3, 121.7, 109.4, 69.7, 65.2, 55.8, 51.9, 48.0, 43.3, 17.5. HRMS (ESI-TOF) m/z [M + H] + calcd for C 37 H 31 BrN 3 O 4 + 660.1492, found 660.1501. HPLC (Chiralpak IF, i-PrOH/hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t major = 34.7 min, t minor = 24.0 min, ee = 99%.

methyl (2'S,3R,5'R)-1,1''-dibenzyl-3''-methyl-5''-(4-nitrophenyl)-2,5''-dioxo-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4'-carboxylate (3g)

White solid, 62 mg, 99% yield, [α] D 25 = 343 (c = 1.0 CHCl 3). 1H NMR (400 MHz, CDCl 3) δ
7.90 (s, 1H), 7.88 (s, 1H), 7.79 (d, J = 7.6 Hz, 1H), 7.24 – 7.17 (m, 4H), 7.09 (t, J = 7.4 Hz, 1H), 7.05 – 6.95 (m, 7H), 6.82 (d, J = 2.5 Hz, 1H), 6.53 (d, J = 7.8 Hz, 1H), 6.48 (s, 1H), 6.46 (s, 1H), 5.58 (d, J = 2.5 Hz, 1H), 4.88 (d, J = 15.6 Hz, 1H), 4.82 (d, J = 15.2 Hz, 1H), 4.62 (d, J = 15.2 Hz, 1H), 4.23 (d, J = 15.6 Hz, 1H), 3.72 (s, 3H), 2.00 (s, 3H).

$^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 172.2, 171.6, 163.6, 156.9, 147.3, 143.0, 142.7, 142.0, 140.1, 135.5, 134.3, 130.1, 130.0, 128.6, 128.4, 127.9, 127.7, 126.7, 125.5, 123.5, 122.9, 109.3, 69.6, 65.1, 56.0, 52.0, 48.1, 43.4, 17.5. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for C$_{37}$H$_{31}$N$_4$O$_6$ 627.2238, found 627.2248.

HPLC (Chiralpak AD, i-PrOH/hexane = 60/40, flow rate = 1.0 mL/min, $\lambda$ = 254 nm): $t_{\text{major}}$ = 32.8 min, $t_{\text{minor}}$ = 13.7 min, ee = 90%.

methyl (2'S,3R,5'R)-1,1''-dibenzyl-3''-methyl-2,5''-dioxo-5''-(4-(trifluoromethyl)phenyl)-1''',5'''-dihydrodSpiro[indoline-3,1'-'cyclopentane-2',4''-pyrazol]-3'-ene-4'-carboxylate (3h)

White solid, 57.1 mg, 88% yield, $[\alpha]$ $\beta$$^2$5 = 400 (c = 1.0 CHCl$_3$). $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 7.79 (dd, J = 7.6, 0.7 Hz, 1H), 7.39 (s, 1H), 7.37 (s, 1H), 7.23 – 7.11 (m, 5H), 7.09 – 7.01 (m, 4H), 6.97 (td, J = 7.6, 1.0 Hz, 3H), 6.79 (d, J = 2.6 Hz, 1H), 6.44 – 6.36 (m, 3H), 5.58 (d, J = 2.5 Hz, 1H), 4.98 (d, J = 15.8 Hz, 1H), 4.82 (d, J = 15.2 Hz, 1H), 4.61 (d, J = 15.2 Hz, 1H), 4.20 (d, J = 15.8 Hz, 1H), 3.72 (s, 3H), 2.00 (s, 3H). $^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 172.5, 171.8, 163.8, 157.1, 142.9, 142.8, 139.5, 139.3, 135.5, 134.3, 139.9, 129.7, 129.4, 128.6, 128.5, 127.9, 127.6, 126.3, 125.5 (q, J = 273 Hz), 125.4, 124.7 (q, J = 3.6 Hz), 123.7, 123.4, 109.5, 69.8, 65.3, 55.9, 51.9, 48.0, 43.3, 17.5. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for C$_{38}$H$_{31}$F$_3$N$_5$O$_4$ 650.2261, found 650.2264. HPLC (Chiralpak IA, i-PrOH/hexane = 80/20, flow rate = 1.0 mL/min, $\lambda$ = 254 nm): $t_{\text{major}}$ = 16.5 min, $t_{\text{minor}}$ = 10.7 min, ee = 92%.
**methyl (2'S,3R,5'R)-1,1''-dibenzyl-3''-methyl-2,5''-dioxo-5''-(m-tolyl)-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4'-carboxylate (3i)**

White solid, 52.9 mg, 89% yield, [α] D 25 = 388 (c = 1.0 CHCl3). 1H NMR (400 MHz, CDCl3) δ 7.79 (dd, J = 7.6, 0.8 Hz, 1H), 7.23 – 7.16 (m, 3H), 7.15 – 7.08 (m, 2H), 7.07 – 6.92 (m, 7H), 6.73 (d, J = 2.6 Hz, 1H), 6.69 (d, J = 6.4 Hz, 2H), 6.36 (d, J = 7.7 Hz, 1H), 6.31 (s, 1H), 6.29 (s, 1H), 5.51 (d, J = 2.6 Hz, 1H), 5.02 (d, J = 15.8 Hz, 1H), 4.83 (d, J = 15.3 Hz, 1H), 4.61 (d, J = 15.3 Hz, 1H), 4.16 (d, J = 15.8 Hz, 1H), 3.71 (s, 3H), 2.12 (s, 3H), 2.01 (s, 3H). 13C NMR (101 MHz, CDCl3) δ 172.6, 172.1, 164.3, 157.5, 143.7, 143.1, 138.5, 137.2, 135.6, 134.8, 134.5, 129.7, 129.5, 128.6, 128.5, 128.1, 127.8, 127.7, 127.6, 127.2, 126.3, 126.3, 125.5, 124.4, 123.1, 109.1, 69.6, 65.5, 56.4, 51.8, 47.9, 43.2, 21.3, 17.6. HRMS (ESI-TOF) m/z [M + H] + calcd for C38H34N3O4 + 596.2544, found 596.2554. HPLC (Chiralpak IA, i-PrOH/hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t_major = 13.2 min, t_minor = 8.0 min, ee = 95%. 
methyl (2'S,3R,5'R)-1,1''-dibenzy1-5''-(3-methoxyphenyl)-3''-methyl-2,5''-dioxo-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3' -ene-4'-carboxylate (3j)

White solid, 58.6 mg, 96% yield, [α]D^25 = 398 (c = 1.0 CHCl3). 1H NMR (400 MHz, CDCl3) δ 7.79 (dd, J = 7.6, 0.7 Hz, 1H), 7.25 – 7.17 (m, 3H), 7.16 – 6.92 (m, 8H), 6.77 (dd, J = 7.9, 2.9 Hz, 1H), 6.73 (d, J = 2.6 Hz, 1H), 6.52 (d, J = 7.6 Hz, 1H), 6.37 (d, J = 7.4 Hz, 4H), 5.53 (d, J = 2.6 Hz, 1H), 5.00 (d, J = 15.8 Hz, 1H), 4.82 (d, J = 15.2 Hz, 1H), 4.61 (d, J = 15.3 Hz, 1H), 4.20 (d, J = 15.9 Hz, 1H), 3.71 (s, 3H), 3.48 (s, 3H), 2.01 (s, 3H). 13C NMR (101 MHz, CDCl3) δ 172.6, 172.1, 164.3, 159.0, 157.4, 143.5, 143.2, 138.6, 136.4, 135.6, 134.5, 129.5, 128.7, 128.6, 128.5, 127.9, 127.6, 127.3, 126.4, 125.5, 124.4, 123.1, 121.6, 114.1, 113.7, 109.2, 69.6, 65.4, 56.5, 55.0, 51.8, 48.0, 43.2, 17.6. HRMS (ESI-TOF) m/z [M + H]^+ calcd for C_{38}H_{34}N_{3}O_{5}^{+} 612.2493, found 612.2495. HPLC (Chiralpak IA, i-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t_major = 13.1 min, t_minor = 10.4 min, ee = 94%.

methyl (2'S,3R,5'R)-1,1''-dibenzy1-5''-(3-chlorophenyl)-3''-methyl-2,5''-dioxo-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3' -ene-4'-carboxylate (3k)
White solid, 56.6 mg, 92% yield, \([\alpha]_D^{25} = 401\ (c = 1.0\ \text{CHCl}_3\)). \(^1\text{H}\) NMR (400 MHz, CDCl\(_3\)) \(\delta\) 7.77 (d, \(J = 7.5\ \text{Hz, 1H}), 7.23 - 7.07\ (m, 8H), 7.06 - 6.93\ (m, 4H), 6.86 (s, 1H), 6.80 (d, \(J = 7.6\ \text{Hz, 1H}), 6.76\ (d, \(J = 2.6\ \text{Hz, 1H}), 6.43\ (d, \(J = 7.8\ \text{Hz, 3H}), 5.49\ (d, \(J = 2.5\ \text{Hz, 1H}), 4.99\ (d, \(J = 15.8\ \text{Hz, 1H}), 4.82\ (d, \(J = 15.2\ \text{Hz, 1H}), 4.61\ (d, \(J = 15.2\ \text{Hz, 1H}), 4.21\ (d, \(J = 15.8\ \text{Hz, 1H}), 3.72\ (s, 3H), 2.00\ (s, 3H). \(^{13}\text{C}\) NMR (101 MHz, CDCl\(_3\)) \(\delta\) 172.5, 171.9, 163.9, 157.2, 143.0, 142.8, 139.3, 137.2, 135.6, 134.4, 133.6, 129.8, 129.2, 128.9, 128.7, 128.6, 127.7, 127.6, 127.5, 127.4, 126.4, 125.4, 123.9, 123.3, 109.3, 69.6, 65.3, 56.0, 51.9, 48.0, 43.2, 17.5. HRMS (ESI-TOF) m/z \([M + H]^+\) calcd for C\(_{37}\)H\(_{31}\)ClN\(_3\)O\(_4\) 616.1998, found 616.2007. HPLC (Chiralpak IA, i-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, \(\lambda = 254\ \text{nm}): t_{\text{major}} = 11.7\ \text{min}, t_{\text{minor}} = 9.6\ \text{min}, ee = 94\%.

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\text{methyl} \quad (2'S,3R,5'R)-1,1''-\text{dibenzyl}-5''-(3\text{-bromophenyl})-3''-\text{methyl}-2,5''-\text{dioxo-1''},5''-\text{dihydrodispiro[indoline-3,1''-cyclopentane-2',4''-pyrazol]-3''-ene-4''-carboxylate (3l)}
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White solid, 63.9 mg, 97% yield, \([\alpha]_D^{25} = 395\ (c = 1.0\ \text{CHCl}_3\)). \(^1\text{H}\) NMR (400 MHz, CDCl\(_3\)) \(\delta\) 7.77 (dd, \(J = 7.6, 0.7\ \text{Hz, 1H}), 7.36 - 7.30\ (m, 1H), 7.23 - 7.07\ (m, 7H), 6.98 (dt, \(J = 22.2, 7.1\ \text{Hz, 5H}), 6.84\ (d, \(J = 7.8\ \text{Hz, 1H}), 6.76\ (d, \(J = 2.6\ \text{Hz, 1H}), 6.43\ (dd, \(J = 7.4, 2.3\ \text{Hz, 3H}), 5.48\ (d, \(J = 2.5\ \text{Hz, 1H}), 5.00\ (d, \(J = 15.8\ \text{Hz, 1H}), 4.82\ (d, \(J = 15.2\ \text{Hz, 1H}), 4.61\ (d, \(J = 15.2\ \text{Hz, 1H}), 4.21\ (d, \(J = 15.8\ \text{Hz, 1H}), 3.72\ (s, 3H), 2.00\ (s, 3H). \(^{13}\text{C}\) NMR (101 MHz, CDCl\(_3\)) \(\delta\) 172.5, 171.8, 163.8, 157.2, 143.0, 142.8, 139.3, 137.5, 135.6, 134.4, 132.0, 130.5, 129.8, 129.3, 128.7, 128.6, 127.9, 127.9, 127.6, 127.4, 126.4, 125.4, 123.8, 123.3, 121.7, 109.3, 69.6, 65.3, 55.9, 51.9, 48.0, 43.3, 17.5. HRMS (ESI-TOF) m/z \([M + H]^+\) calcd for C\(_{37}\)H\(_{31}\)BrN\(_3\)O\(_4\) 660.1492,
found 660.1495. HPLC (Chiralpak IA, i-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t\text{major} = 12.1 \text{ min}, t\text{minor} = 9.8 \text{ min}, ee = 92%.

methyl \((2'S,3R,5'R)-1,1''-\text{dibenzyl}-5''-(2\text{-chlorophenyl})-3''-\text{methyl}-2,5''-\text{dioxo}-1''',5''-\text{dihydrodispiro[indoline-3,1'\text{-cyclopentane}-2',4''-pyrazol]-3'\text{-ene}-4'\text{-carboxylate}} \text{ (3m)}\)

White solid, 53.5 mg, 87% yield, [α] \text{D}^{25} = 307 (c = 1.0 \text{ CHCl}_3). \text{^1H NMR (400 MHz, CDCl}_3) \text{ δ} 7.82 (d, J = 7.7 \text{ Hz, 1H}), 7.51 – 7.46 (m, 1H), 7.21 (dd, J = 8.2, 3.1 \text{ Hz, 3H}), 7.11 (ddd, J = 10.3, 9.0, 2.2 \text{ Hz, 5H}), 7.07 – 7.01 (m, 4H), 6.89 (td, J = 7.7, 0.9 \text{ Hz, 1H}), 6.79 (d, J = 2.6 \text{ Hz, 1H}), 6.44 (s, 1H), 6.42 (s, 1H), 6.40 (d, J = 7.8 \text{ Hz, 1H}), 6.19 (d, J = 2.6 \text{ Hz, 1H}), 5.05 (d, J = 15.8 \text{ Hz, 1H}), 4.81 (d, J = 15.2 \text{ Hz, 1H}), 4.63 (d, J = 15.2 \text{ Hz, 1H}), 4.24 (d, J = 15.8 \text{ Hz, 1H}), 3.65 (s, 3H), 2.01 (s, 3H). \text{^13C NMR (101 MHz, CDCl}_3) \text{ δ} 172.4, 172.1, 163.8, 157.3, 143.7, 142.6, 139.2, 135.6, 134.6, 134.6, 133.3, 132.5, 129.5, 129.2, 128.65, 128.64, 128.5, 128.0, 127.6, 127.6, 127.3, 126.4, 126.1, 123.6, 122.7, 108.8, 69.9, 65.5, 51.9, 51.8, 48.1, 43.2, 17.7. HRMS (ESI-TOF) m/z [M + H] \text{ +} \text{ caledd for C}_{37}\text{H}_{31}\text{ClN}_{3}\text{O}_{4}^+ 616.1998, \text{ found 616.204}. \text{ HPLC (Chiralpak IA, i-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t\text{major} = 13.2 \text{ min, t\text{minor} = 9.0 \text{ min, ee = 90%}}.}
methyl (2'S,3R,5'R)-1,1''-dibenzyl-5'- (2,4-dichlorophenyl)-3''-methyl-2,5''-dioxo-1'',5''-dihydrodibisp[ indoline-3,1'-cyclopentane-2',4''-pyrazol] -3'-ene-4''-carboxylate (3n)

White solid, 52.6 mg, 90% yield, [α]D25 = 423 (c = 1.0 CHCl3). 1H NMR (400 MHz, CDCl3) δ 7.79 (dd, J = 7.7, 0.7 Hz, 1H), 7.40 (d, J = 8.5 Hz, 1H), 7.24 – 7.16 (m, 5H), 7.13 – 7.06 (m, 3H), 7.08 (dd, J = 8.5, 2.2 Hz, 1H), 7.03 (dd, J = 7.3, 2.2 Hz, 2H), 6.88 (td, J = 7.7, 0.9 Hz, 1H), 6.80 (d, J = 2.6 Hz, 1H), 6.49 (s, 1H), 6.48 – 6.44 (m, 2H), 6.13 (d, J = 2.6 Hz, 1H), 5.07 (d, J = 15.8 Hz, 1H), 4.81 (d, J = 15.2 Hz, 1H), 4.63 (d, J = 15.2 Hz, 1H), 4.25 (d, J = 15.8 Hz, 1H), 3.67 (s, 3H), 2.01 (s, 3H). 13C NMR (101 MHz, CDCl3) δ 172.3, 171.9, 163.6, 157.0, 143.1, 142.6, 139.7, 135.6, 135.2, 134.5, 133.9, 133.4, 132.0, 129.7, 128.9, 128.7, 128.6, 128.0, 127.6, 127.5, 126.5, 126.3, 123.3, 122.9, 108.9, 69.8, 65.4, 51.9, 51.3, 48.1, 43.3, 17.7. HRMS (ESI-TOF) m/z [M + H]+ calcd for C37H36Cl2N3O4 650.1608, found 650.1619. HPLC (Chiralpak IA, i-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): tmajor = 14.7 min, tminor = 9.0 min, ee = 86%.
methyl (2'S,3R,5'R)-1,1"-dibenzyl-3"-methyl-5"-(naphthalen-1-yl)-2,5"-dioxo-1",5"-dihydrodispiro[indoline-3,1'-cyclopentane-2',4"-pyrazol]-3'-ene-4'-carboxylate (3o)

White solid, 50.5 mg, 80% yield, [α] D 25 = 250 (c = 1.0 CHCl 3 ). 1 H NMR (400 MHz, CDCl 3 ) δ 7.97 (dd, J = 7.5, 1.2 Hz, 1H), 7.73 (t, J = 7.8 Hz, 2H), 7.55 (dd, J = 7.3, 1.0 Hz, 1H), 7.50 (d, J = 8.6 Hz, 1H), 7.40 – 7.35 (m, 1H), 7.26 – 7.19 (m, 4H), 7.10 (dd, J = 6.7, 2.9 Hz, 2H), 7.05 – 6.90 (m, 4H), 6.87 (t, J = 7.7 Hz, 2H), 6.83 (d, J = 2.5 Hz, 1H), 6.44 (d, J = 2.4 Hz, 1H), 6.09 (d, J = 7.4 Hz, 1H), 6.01 (d, J = 7.5 Hz, 2H), 4.86 (d, J = 15.1 Hz, 2H), 4.70 (d, J = 15.2 Hz, 1H), 4.04 (d, J = 16.0 Hz, 1H), 3.61 (s, 3H), 2.05 (s, 3H). 13 C NMR (101 MHz, CDCl 3 ) δ 172.6, 172.3, 164.4, 157.8, 144.7, 142.9, 138.7, 135.7, 134.2, 133.5, 131.3, 129.5, 128.6, 128.4, 128.2, 128.07, 128.05, 127.7, 127.1, 126.1, 125.9, 125.1, 125.0, 124.4, 123.7, 122.7, 109.2, 69.9, 65.9, 51.8, 51.77, 48.2, 42.9, 17.9. HRMS (ESI-TOF) m/z [M + H] + calcd for C 41 H 34 N 3 O 4 + 632.2544, found 632.2552. HPLC (Chiralpak IA, i-PrOH/hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t major = 16.5 min, t minor = 9.7 min, ee = 96%.

methyl (2'S,3R,5'R)-1,1"-dibenzyl-3"-methyl-2,5"-dioxo-5"-(thiophen-2-yl)-1",5"-dihydrodispiro[indoline-3,1'-cyclopentane-2',4"-pyrazol]-3'-ene-4'-
**carboxylate (3p)**

White solid, 55.8 mg, 95% yield, [α]$_D^{25}$ = 365 (c = 1.0 CHCl$_3$). $^1$H NMR (400 MHz, CDCl$_3$) δ 7.73 (dd, $J$ = 7.6, 0.7 Hz, 1H), 7.23 − 7.09 (m, 7H), 7.06 (dd, $J$ = 5.1, 1.1 Hz, 1H), 6.96 (td, $J$ = 8.9, 1.2 Hz, 3H), 6.85 (dd, $J$ = 5.1, 3.6 Hz, 1H), 6.74 (d, $J$ = 3.5 Hz, 1H), 6.71 (d, $J$ = 2.7 Hz, 1H), 6.55 (d, $J$ = 6.5 Hz, 2H), 6.45 (d, $J$ = 7.8 Hz, 1H), 5.78 (d, $J$ = 2.6 Hz, 1H), 5.04 (d, $J$ = 15.8 Hz, 1H), 4.81 (d, $J$ = 15.2 Hz, 1H), 4.60 (d, $J$ = 15.3 Hz, 1H), 4.31 (d, $J$ = 15.8 Hz, 1H), 3.73 (s, 3H), 2.00 (s, 3H).

$^{13}$C NMR (101 MHz, CDCl$_3$) δ 172.8, 171.8, 163.8, 157.2, 143.3, 143.1, 138.3, 136.9, 135.6, 134.6, 129.7, 128.7, 128.5, 127.9, 127.6, 127.3, 127.2, 126.6, 125.4, 124.5, 123.2, 109.2, 69.3, 65.4, 51.89, 51.88 48.0, 44.3, 17.4. HRMS (ESI-TOF) m/z [M + H]$^+$ caleed for C$_{35}$H$_{30}$N$_3$O$_4$S$^+$ 588.1592, found 588.1951. HPLC (Chiralpak IA, i-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): $t_{\text{major}}$ = 19.8 min, $t_{\text{minor}}$ = 12.9 min, ee = 97%.

**benzyl (2'S,3R,5'R)-1,1''-dibenzyl-3''-methyl-2,5''-dioxo-5''-phenyl-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4'-'pyrazol]-3''-ene-4'-carboxylate (3q)**

White solid, 59.1 mg, 90% yield, [α]$_D^{25}$ = 346 (c = 1.0 CHCl$_3$). $^1$H NMR (400 MHz, CDCl$_3$) $^1$H NMR (400 MHz, CDCl$_3$) δ 7.79 (d, $J$ = 7.6 Hz, 1H), 7.26 − 7.16 (m, 7H), 7.11 (dd, $J$ = 12.6, 4.9 Hz, 4H), 7.04 (t, $J$ = 7.3 Hz, 4H), 7.00 − 6.95 (m, 3H), 6.92 (d, $J$ = 6.6 Hz, 2H), 6.79 (d, $J$ = 2.6 Hz, 1H), 6.36 (d, $J$ = 7.7 Hz, 1H), 6.30 (d, $J$ = 7.4 Hz, 2H), 5.56 (d, $J$ = 2.6 Hz, 1H), 5.21 (d, $J$ = 12.5 Hz, 1H), 5.05 (d, $J$ = 12.5 Hz, 1H), 5.01 (d, $J$ = 15.9 Hz, 1H), 4.83 (d, $J$ = 15.2 Hz, 1H), 4.60 (d, $J$ = 15.3 Hz, 1H), 4.18 (d, $J$ = 15.9 Hz, 1H), 2.01 (s, 3H). $^{13}$C NMR (101 MHz,
CDCl₃ δ 172.6, 172.1, 163.6, 157.5, 143.6, 143.0, 139.1, 135.6, 135.4, 135.2, 134.4, 129.6, 129.4, 128.6, 128.5, 128.4, 128.1, 128.0, 127.9, 127.8, 127.6, 127.3, 127.2, 126.3, 125.5, 124.3, 123.1, 109.2, 69.7, 66.6, 65.5, 56.6, 48.0, 43.1, 17.6. HRMS (ESI-TOF) m/z [M + H]+ calcd for C₄₃H₃₆N₃O₄⁺ 658.2700, found 658.2702. HPLC (Chiralpak IA, i-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t_major = 22.1 min, t_minor = 29.6 min, ee = 87%.

White solid, 55.9 mg, 94% yield, [α]D²⁵ = 190 (c = 1.0 CHCl₃). ¹H NMR (400 MHz, CDCl₃) δ 7.64 (d, J = 8.5 Hz, 1H), 7.21 (dd, J = 6.9, 5.6 Hz, 3H), 7.12 (dd, J = 14.8, 7.5 Hz, 3H), 7.07 – 6.97 (m, 4H), 6.91 (d, J = 7.3 Hz, 2H), 6.73 (d, J = 2.6 Hz, 1H), 6.40 (dd, J = 8.5, 2.4 Hz, 1H), 6.31 (s, 1H), 6.29 (s, 1H), 5.94 (s, 1H), 5.48 (d, J = 2.6 Hz, 1H), 4.96 (d, J = 15.8 Hz, 1H), 4.84 (d, J = 15.3 Hz, 1H), 4.61 (d, J = 15.3 Hz, 1H), 4.14 (d, J = 15.8 Hz, 1H), 3.70 (s, 3H), 3.66 (s, 3H), 2.00 (s, 3H). ¹³C NMR (101 MHz, CDCl₃) δ 173.1, 172.2, 164.2, 160.9, 157.5, 144.3, 143.6, 138.6, 135.7, 135.1, 134.4, 129.2, 128.6, 128.4, 127.8, 127.8, 127.5, 127.2, 127.2, 126.4, 126.3, 115.9, 106.7, 97.1, 69.8, 65.3, 56.2, 55.2, 51.8, 47.9, 43.1, 17.5. HRMS (ESI-TOF) m/z [M + H]+ calcd for C₃₈H₃₄N₂O₄⁺ 596.2544, found 596.2554. HPLC (Chiralpak IA, i-PrOH/hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): t_major = 9.0 min, t_minor = 6.5 min, ee = 92%.
methyl (2'S,3R,5'R)-1''-dibenzyl-6-methoxy-3''-methyl-2,5''-dioxo-5'-phenyl-1'',5''-dihydrodispiro[indoline-3,1'-'cyclopentane-2',4''-pyrazol]-3''-ene-4''-carboxylate (3s)

White solid, 58 mg, 95% yield, [α]D25 = 133 (c = 1.0 CHCl3). 1H NMR (400 MHz, CDCl3) δ 7.64 (s, 1H), 7.25 – 7.07 (m, 7H), 7.03 (t, J = 7.4 Hz, 2H), 6.96 – 6.87 (m, 5H), 6.74 (d, J = 2.6 Hz, 1H), 6.30 (s, 1H), 6.28 (s, 1H), 6.25 (d, J = 8.0 Hz, 1H), 5.53 (d, J = 2.6 Hz, 1H), 4.98 (d, J = 15.8 Hz, 1H), 4.92 (d, J = 15.4 Hz, 1H), 4.56 (d, J = 15.4 Hz, 1H), 4.15 (d, J = 15.8 Hz, 1H), 3.70 (s, 3H), 2.22 (s, 3H), 2.01 (s, 3H). 13C NMR (101 MHz, CDCl3) δ 172.6, 172.2, 164.2, 157.6, 143.6, 140.7, 138.8, 135.7, 135.1, 134.6, 132.7, 129.9, 129.2, 128.6, 128.5, 127.8, 127.5, 127.3, 127.1, 126.4, 126.1, 124.4, 109.0, 69.7, 65.5, 56.4, 51.8, 47.8, 43.1, 21.2, 17.6. HRMS (ESI-TOF) m/z [M + H]+ calcd for C38H34N3O5+ 612.2493, found 612.2499. HPLC (Chiralpak IA, i-PrOH/hexane = 60/40, flow rate = 1.0 mL/min, λ = 254 nm): tmajor = 11.5 min, tminor = 8.3 min, ee = 92%.
methyl (2'S,3R,5'R)-1,3''-dimethyl-2,5''-dioxo-1''-phenyl-5''-(p-tolyl)-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4''-carboxylate (3t)

White solid, 55.9 mg, 97% yield, [α]$_D^{25}$ = 345 (c = 1.0 CHCl$_3$). $^1$H NMR (500 MHz, CDCl$_3$) δ 7.78 (d, J = 7.8 Hz, 3H), 7.37 (t, J = 8.0 Hz, 2H), 7.22 (t, J = 7.5 Hz, 1H), 7.18 (t, J = 7.4 Hz, 1H), 7.10 (t, J = 7.2 Hz, 1H), 7.05 (t, J = 7.3 Hz, 2H), 7.01 (t, J = 7.7 Hz, 1H), 6.82 (d, J = 2.5 Hz, 1H), 6.78 (s, 1H), 6.77 (s, 1H), 6.56 (d, J = 7.8 Hz, 1H), 5.48 (d, J = 2.4 Hz, 1H), 3.70 (s, 3H), 2.72 (s, 3H), 2.13 (s, 3H). $^{13}$C NMR (126 MHz, CDCl$_3$) δ 172.3, 170.6, 164.2, 158.1, 144.1, 143.4, 138.8, 137.37, 134.7, 129.8, 128.9, 128.7, 127.4, 125.6, 125.0, 124.2, 123.2, 119.1, 107.9, 70.3, 66.1, 56.9, 51.8, 25.5, 17.6. HRMS (ESI-TOF) m/z [M + Na]$^+$ C$_{30}$H$_{25}$N$_3$NaO$_4$ $^+$ 514.1737, found 514.1737. HPLC (Chiralpak Ic, i-PrOH/hexane = 90/10, flow rate = 1.0 mL/min, λ = 254 nm): $t_{\text{major}}$ = 27.1 min, $t_{\text{minor}}$ = 33.4 min, ee = 97%.

methyl (2'S,3R,5'R)-1,3''-dimethyl-2,5''-dioxo-1''-phenyl-5''-(p-tolyl)-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4''-carboxylate (3u)

White solid, 55.9 mg, 94% yield, [α]$_D^{25}$ = 315 (c = 1.0 CHCl$_3$). $^1$H NMR (400 MHz, CDCl$_3$) δ 7.77 (d, J = 7.6 Hz, 3H), 7.41 – 7.32 (m, 2H), 7.25 – 7.15 (m, 2H), 7.00 (td, J = 7.7, 0.9 Hz,
1H), 6.86 (s, 1H), 6.84 (s, 1H), 6.79 (d, J = 2.6 Hz, 1H), 6.68 (s, 1H), 6.66 (s, 1H), 6.57 (d, J = 7.7 Hz, 1H), 5.44 (d, J = 2.6 Hz, 1H), 3.71 (s, 3H), 2.76 (s, 3H), 2.20 (s, 3H), 2.13 (s, 3H). 13C NMR (101 MHz, CDCl3) δ 172.5, 170.6, 164.2, 158.1, 144.1, 143.6, 138.5, 137.4, 136.7, 131.6, 129.7, 128.9, 128.5, 125.5, 125.0, 124.3, 123.1, 119.1, 107.9, 70.3, 66.1, 56.6, 51.8, 25.6, 21.1, 17.6. HRMS (ESI-TOF) m/z [M + Na]+ C31H27N3NaO4 528.1894, found 528.1905.

HPLC (Chiralpak IC, i-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): tmajor = 11.7 min, tminor = 16.0 min, ee = 97%.

**methyl (2'S,3R,5'R)-1,3''-dimethyl-5''-(napthalen-1-yl)-2,5''-dioxo-1''-phenyl-1'',5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4''-carboxylate (3v)**

White solid, 55.9 mg, 94% yield, [α]D 25° = 172 (c = 1.0 CHCl3). 1H NMR (400 MHz, CDCl3) δ 7.93 (dd, J = 7.6, 0.9 Hz, 1H), 7.84 (d, J = 1.1 Hz, 1H), 7.81 (d, J = 1.0 Hz, 1H), 7.66 (d, J = 1.9 Hz, 1H), 7.64 (d, J = 2.4 Hz, 1H), 7.47 (dd, J = 7.3, 1.1 Hz, 1H), 7.45 – 7.35 (m, 4H), 7.18 – 7.23 (m, 2H), 7.08 (td, J = 7.7, 1.2 Hz, 1H), 7.03 – 6.96 (m, 2H), 6.91 (d, J = 2.4 Hz, 1H), 6.38 (d, J = 2.4 Hz, 1H), 6.28 (d, J = 7.8 Hz, 1H), 3.62 (s, 3H), 2.56 (s, 3H), 2.17 (s, 3H). 13C NMR (101 MHz, CDCl3) δ 172.1, 171.0, 164.3, 158.5, 144.4, 143.7, 138.8, 137.4, 133.2, 131.8, 131.1, 129.7, 128.9, 128.2, 128.0, 127.9, 125.6, 125.6, 124.9, 124.8, 124.6, 124.4, 123.3, 122.8, 119.1, 107.9, 70.6, 66.4, 52.1, 51.9, 25.4, 18.0. HRMS (ESI-TOF) m/z [M + Na]+ C34H27N3NaO4 564.1894, found 564.1892. HPLC (Chiralpak IA, i-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, λ = 254 nm): tmajor = 11.2 min, tminor = 14.0 min, ee = 98%.
methyl (2'S,3R,5'R)-1,3''-dimethyl-2,5''-dioxo-1''-phenyl-5''-(thiophen-2-yl)-1''-5''-dihydrodispiro[indoline-3,1'-cyclopentane-2',4''-pyrazol]-3'-ene-4''-carboxylate (3w)

White solid, 55.9 mg, 94% yield, \([\alpha]_D^{25} = 515 (c = 1.0 \text{ CHCl}_3)\). $^1$H NMR (400 MHz, CDCl$_3$) $\delta$ 7.76 (d, $J = 1.2$ Hz, 1H), 7.74 (d, $J = 1.0$ Hz, 1H), 7.72 (dd, $J = 7.6$, 0.7 Hz, 1H), 7.40 – 7.33 (m, 2H), 7.24 (dd, $J = 7.7$, 1.2 Hz, 1H), 7.22 – 7.15 (m, 1H), 7.03 – 6.97 (m, 1H), 6.80 – 6.75 (m, 2H), 6.67 (d, $J = 2.7$ Hz, 1H), 6.64 (d, $J = 7.7$ Hz, 1H), 5.74 (d, $J = 2.7$ Hz, 1H), 3.73 (s, 3H), 2.90 (s, 3H), 2.14 (s, 3H). $^{13}$C NMR (101 MHz, CDCl$_3$) $\delta$ 172.6, 170.3, 163.7, 157.7, 144.2, 143.1, 138.1, 137.2, 136.7, 129.9, 128.8, 126.9, 126.3, 125.6, 124.9, 124.4, 123.8, 123.2, 119.1, 108.0, 70.1, 65.9, 52.2, 51.9, 25.8, 17.4. HRMS (ESI-TOF) m/z [M + Na]$^+$ C$_{28}$H$_{23}$N$_3$NaO$_4$S$^+$ 520.1301, found 520.1306. HPLC (Chiralpak Ic, i-PrOH /hexane = 80/20, flow rate = 1.0 mL/min, $\lambda = 254$ nm): $t_{\text{major}} = 16.5$ min, $t_{\text{minor}} = 25.2$ min, ee = 99%.
4. X-Ray Crystallographic Analysis and Determination of the Absolute Configurations of the Products

![X-ray structure of 3f](image)

**Figure 1** X-ray structure of 3f

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<tr>
<td>Index ranges</td>
<td>-9 ≤ h ≤ 11, -11 ≤ k ≤ 11, -47 ≤ l ≤ 47</td>
</tr>
</tbody>
</table>
Reflections collected 34770
Independent reflections 6745 [R (int) = 0.0446]
Completeness to theta = 67.679° 100.0 %
Absorption correction Semi-empirical from equivalents
Max. and min. transmission 0.7536 and 0.5297
Refinement method Full-matrix least-squares on F^2
Data / restraints / parameters 6745 / 36 / 475
Goodness-of-fit on F^2 1.082
Final R indices [I>2sigma (I)] R1 = 0.0249, wR2 = 0.0597
R indices (all data) R1 = 0.0252, wR2 = 0.0599
Absolute structure parameter 0.034(4)
Extinction coefficient n/a
Largest diff. peak and hole 0.366 and -0.396 e.Å^-3

5. References
6. NMR Spectra of the Products