Supporting Information
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Supporting Information

Visible-Light-Mediated Trifluoroethylation of N-arylacrylamides with Trifluoroethyl Iodide: Synthesis of CF₃-Containing Oxindoles

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**General Remarks:** Solvents were purified or dried in a standard manner. Reactions were monitored by TLC on silica gel plates (GF254), and the analytical thin-layer chromatography (TLC) was performed on precoated, glass-backed silica gel plates. $^1$H NMR spectra and $^{13}$C NMR spectra were measured in CDCl$_3$ and recorded on a 400 or 500 MHz NMR spectrometers with TMS as an internal standard. Abbreviations for signal couplings are: s, singlet; d, doublet; t, triplet; m, multiplet. HRMS analyses was recorded on Waters Q-TOF Global mass spectrometer. Melting points are uncorrected. $N$-aryl acrylamides 1a-u were prepared as described previously[1].

**Typical procedure for aryltrifluoromethylation of $N$-arylacrylamides:** To a mixture of 1a-u (0.3 mmol) CF$_3$CH$_2$I (0.9 mmol), and K$_2$CO$_3$ (0.6 mmol) in 2.0 mL of DMF was added fac-Ir(ppy)$_3$ (0.006 mmol, 2.0 mol%) under N$_2$ atmosphere. The solution was stirred at room temperature under 5 W blue LED irradiation for 24 h. Then the reaction mixture was diluted by adding EtOAc and brine. The aqueous layer was extracted with EtOAc The combined organic layer was dried over MgSO$_4$, filtered and concentrated. The residue was purified by flash column chromatography(petroleum ether/ethyl acetate 10:1 as the eluant) on silica gel to give the desired oxindoles.

**Analytical data for compounds 2a-u**
3-(3,3,3-trifluoropropyl)-1,3-dimethylindolin-2-one (2a)

Compound 2a was obtained according to the general procedure as a white solid in 90% yield after flash chromatography (PE /EtOAc = 10:1, V/V); m.p. 103-105 °C. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 7.38 (t, $J$ = 7.6 Hz, 1H), 7.21 (d, $J$ = 7.2 Hz, 1H), 7.11 (t, $J$ = 7.6 Hz, 1H), 6.87 (d, $J$ = 8.0 Hz, 1H), 3.23 (s, 3H), 2.17 (dt, $J$ = 1.32 Hz, 4.4 Hz, 1H), 1.96 (dt, $J$ = 1.32 Hz, 4.4 Hz, 1H), 1.79-1.89 (m, 1H), 1.63-1.73 (m, 1H), 1.40 (s, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$): $\delta$ = 179.4, 143.1, 132.6, 128.4, 126.8 (q, $J$ = 274.5 Hz), 123.0, 122.5, 108.3, 47.0, 30.1 (q, $J$ = 2.75 Hz), 29.3 (q, $J$ = 28.8 Hz), 26.2, 23.6. $^{19}$F NMR (470 MHz, CDCl$_3$) $\delta$ = -66.5 (t, $J$ = 10.3 Hz, 3F). HRMS: calc. for [M+H]$^+$ C$_{13}$H$_{15}$F$_3$NO: 258.1100, found: 258.1106.

1-ethyl-3-(3,3,3-trifluoropropyl)-3-methylindolin-2-one (2b)

Compound 2b was obtained according to the general procedure as a white solid in 87% yield after flash chromatography (PE /EtOAc = 10:1, V/V); m.p. 98-99 °C. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 7.27-7.32 (m, 1H), 7.19 (d, $J$ = 7.2 Hz, 1H), 7.09 (t, $J$ = 7.2 Hz, 1H), 6.90 (d, $J$ = 8.0 Hz, 1H), 3.72-3.84 (m, 2H), 2.18 (dt, $J$ = 1.32 Hz, 4.4 Hz, 1H), 1.94 (dt, $J$ = 1.32 Hz, 4.4 Hz, 1H), 1.78-1.87 (m, 1H), 1.60-1.70 (m, 1H), 1.39 (s, 3H), 1.26 (t, $J$ = 7.2 Hz, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$): $\delta$ = 178.9, 142.2, 132.7, 128.3, 126.8 (q, $J$ = 274.5 Hz), 122.7, 108.5, 46.8, 34.6, 30.2 (q, $J$ =2.63 Hz), 29.2 (q, $J$ =28.8 Hz), 23.6, 12.7. $^{19}$F NMR (470 MHz, CDCl$_3$) $\delta$ = -66.5 (t, $J$ = 10.8 Hz, 3F). HRMS: calc. for [M+H]$^+$ C$_{14}$H$_{17}$F$_3$NO: 272.1257 found: 272.1259.

3-(3,3,3-trifluoropropyl)-1-isopropyl-3-methylindolin-2-one (2c)
Compound 2e was obtained according to the general procedure as a white solid in 88% yield after flash chromatography (PE /EtOAc = 10:1, V/V); m.p. 110-112 °C. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 7.24-7.29\) (m, 1H), 7.19 (d, \(J = 7.2\) Hz, 1H), 7.03-7.09 (m, 2H), 4.61-4.68 (m, 1H), 2.17 (dt, \(J = 1.32\) Hz, 4.4 Hz, 1 H), 1.93 (dt, \(J = 1.32\) Hz, 4.4 Hz, 1 H), 1.76-1.85 (m, 1H), 1.57-1.66 (m, 1H), 1.49 (s, 3H), 1.47 (s, 3H), 1.38 (s, 3H); \(^{13}\)C NMR (125 MHz, CDCl\(_3\)): \(\delta = 179.0\), 141.8, 133.0, 128.0, 126.8 (q, \(J = 274.6\) Hz), 122.7, 122.4, 110.0, 46.6, 43.8, 30.3 (d, \(J = 2.8\) Hz), 29.2 (q, \(J = 29.0\) Hz), 23.8, 19.6, 19.4. \(^{19}\)F NMR (470 MHz, CDCl\(_3\)) \(\delta = -66.5\) (t, \(J = 10.3\) Hz, 3 F). HRMS: calc. for [M+H]\(^+\) C\(_{14}\)H\(_{19}\)F\(_3\)NO: 286.1413, found: 286.1413.

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\text{1-butyl-3-(3,3,3-trifluoropropyl)-3-methylindolin-2-one (2d)}
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Compound 2d was obtained according to the general procedure as a white solid in 85% yield after flash chromatography (PE /EtOAc = 10:1, V/V); m.p. 105-107 °C. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 7.26-7.31\) (m, 1H), 7.19 (d, \(J = 7.2\) Hz, 1H), 7.08 (t, \(J = 7.6\) Hz, 1H), 6.88 (d, \(J = 8.0\) Hz, 1H), 3.69-3.73 (m, 2H), 2.17 (dt, \(J = 1.28\) Hz, 4.4 Hz, 1 H), 1.94 (dt, \(J = 1.28\) Hz, 4.4 Hz, 1 H), 1.80-1.88 (m, 1H), 1.60-1.71 (m, 3H), 1.35-1.43 (m, 5H), 0.96 (t, \(J = 7.2\) Hz, 3H); \(^{13}\)C NMR (125 MHz, CDCl\(_3\)): \(\delta = 179.2\), 142.6, 132.3, 128.3, 126.8 (q, \(J = 274.6\) Hz), 122.7, 122.6, 108.6, 46.8, 39.7, 30.1 (q, \(J = 3.4\) Hz), 29.5, 29.3 (q, \(J = 29.1\) Hz), 23.8, 20.2, 13.7. \(^{19}\)F NMR (470 MHz, CDCl\(_3\)) \(\delta = -66.5\) (t, \(J = 10.3\) Hz, 3 F). HRMS: calc. for [M+H]\(^+\) C\(_{16}\)H\(_{21}\)F\(_3\)NO: 300.1570, found: 300.1566.

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\text{1-benzyl-3-(3,3,3-trifluoropropyl)-3-methylindolin-2-one (2e)}
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Compound 2e was obtained according to the general procedure as a white solid in 85% yield after flash chromatography (PE /EtOAc = 10:1, V/V); m.p. 92-94 °C. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 7.24-7.33\) (m, 5 H), 7.16-7.19 (m, 2 H), 7.06 (t, \(J = 7.6\) Hz, 2 H), 7.0-7.05 (m, 1H), 7.0-7.04 (m, 1H), 6.85-6.89 (m, 1H), 5.37-5.42 (m, 1H), 4.76-4.82 (m, 1H), 3.20-3.26 (m, 1H), 2.80-2.86 (m, 1H), 1.80-1.86 (m, 1H), 1.60-1.66 (m, 1H), 1.35-1.41 (m, 5H), 0.95 (t, \(J = 7.2\) Hz, 3H); \(^{13}\)C NMR (125 MHz, CDCl\(_3\)): \(\delta = 179.2\), 142.6, 132.3, 128.3, 126.8 (q, \(J = 274.6\) Hz), 122.7, 122.6, 108.6, 46.8, 39.7, 30.1 (q, \(J = 3.4\) Hz), 29.5, 29.3 (q, \(J = 29.1\) Hz), 23.8, 20.2, 13.7. \(^{19}\)F NMR (470 MHz, CDCl\(_3\)) \(\delta = -66.5\) (t, \(J = 10.3\) Hz, 3 F). HRMS: calc. for [M+H]\(^+\) C\(_{16}\)H\(_{21}\)F\(_3\)NO: 300.1570, found: 300.1566.
Hz, 1 H), 6.78 (d, J = 7.6 Hz, 1 H), 4.91 (s, 2 H), 2.23 (dt, J = 1.32 Hz, 4.0 Hz, 1 H),
2.00 (dt, J = 1.32 Hz, 4.0 Hz, 1 H), 1.82-1.92 (m, 1 H), 1.65-1.75 (m, 1H), 1.45 (s, 3
H); $^{13}$C NMR (125 MHz, CDCl$_3$): δ = 179.5, 142.2, 135.9, 132.5, 128.9, 128.3, 127.8,
127.3, 126.8 (q, J = 274.4 Hz), 123.0, 122.6, 109.4, 47.0 43.8, 30.2(q, J = 2.8 Hz),
29.4 (q, J = 29.1 Hz), 23.9. $^{19}$F NMR (470 MHz, CDCl$_3$) δ = -66.5 (t, J = 10.8 Hz, 3

![3-(3,3,3-trifluoropropyl)-3-methyl-1-phenylindolin-2-one (2f)](image)

3-(3,3,3-trifluoropropyl)-3-methyl-1-phenylindolin-2-one (2f)

Compound 2f was obtained according to the general procedure as a white solid in
80% yield after flash chromatography (PE/EtOAc = 10:1, V/V). $^1$H NMR (400 MHz,
CDCl$_3$): δ = 7.53 (t, J = 8.0 Hz, 2H), 7.39-7.43 (m, 3H), 7.21-7.27 (m, 2H), 7.19 (t, J
= 7.2 Hz, 1H), 6.87 (d, J = 8.0 Hz, 1H), 2.28 (dt, J = 1.28 Hz, 4.0 Hz, 1 H), 1.94-2.09
(m, 2H), 1.77-1.86 (m, 1H), 1.52 (s, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$): δ = 178.9,
143.1, 134.3, 132.3, 129.7, 128.3, 128.2, 126.8 (q, J = 274.2 Hz), 126.5, 122.8, 109.7,
47.1, 30.6 (q, J =2.5 Hz), 29.4 (q, J=28.5 Hz), 23.9. $^{19}$F NMR (470 MHz, CDCl$_3$) δ =
-66.4 (t, J = 10.3 Hz, 3 F). HRMS: calc. for [M+H]$^+$ C$_{19}$H$_{17}$F$_3$NO: 320.1257, found:
320.1260.

![3-(3,3,3-trifluoropropyl)-1,3,5-trimethylindolin-2-one (2h)](image)

3-(3,3,3-trifluoropropyl)-1,3,5-trimethylindolin-2-one (2h)

Compound 2h was obtained according to the general procedure as a white solid in
92% yield after flash chromatography (PE/EtOAc = 10:1, V/V). $^1$H NMR (400 MHz,
CDCl$_3$): δ = 7.10 (d, J = 7.6 Hz, 1H), 7.00 (s, 1H), 6.76 (d, J = 8.0 Hz, 1H), 3.20 (s,
3H), 2.36 (s, 3H), 2.16 (dt, J = 1.28 Hz, 4.4 Hz, 1 H), 1.93 (dt, J = 1.28 Hz, 4.4 Hz, 1
H), 1.77-1.88 (m, 1H), 1.64-1.73 (m, 1H), 1.38 (s, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$):
δ = 179.3, 140.7, 132.61, 132.57, 128.6, 126.8 (q, J = 275.3 Hz), 123.3, 108.1, 47.0,
30.2 (q, J =3.75 Hz), 29.4 (q, J =29.0 Hz), 26.3, 23.6, 21.1. $^{19}$F NMR (470 MHz,
CDCl$_3$ $\delta$ = -66.5 (t, $J = 9.9$ Hz, 3 F). HRMS: calc. for [M+H]$^+$ C$_{14}$H$_{17}$F$_3$NO: 272.1257, found: 272.1255.

![Structure of 3-(3,3,3-trifluoropropyl)-1,3,5-trimethylindolin-2-one (2i)](structure_image)

**3-(3,3,3-trifluoropropyl)-1,3,5-trimethylindolin-2-one (2i)**

Compound 2i was obtained according to the general procedure as a white solid in 91% yield after flash chromatography (PE /EtOAc = 10:1, V/V). $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 6.76-6.84 (m, 3H), 3.81 (s, 3H), 3.20 (s, 3H), 2.17 (dt, $J = 1.32$ Hz, 4.4 Hz, 1 H), 1.92 (dt, $J = 1.32$ Hz, 4.4 Hz, 1 H), 1.78-1.88 (m, 1H), 1.64-1.74 (m, 1H), 1.39 (s, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$): $\delta$ = 179.0, 156.4, 136.6, 134.0, 126.8 (q, $J$ = 274.4 Hz), 112.2, 110.2, 108.6, 55.8, 47.4, 30.2 (q, $J$ =2.75 Hz), 29.3 (q, $J$ =28.8 Hz), 26.3, 23.7. $^{19}$F NMR (470 MHz, CDCl$_3$) $\delta$ = -66.5 (t, $J = 10.3$ Hz, 3 F). HRMS: calc. for [M+H]$^+$ C$_{14}$H$_{17}$F$_3$NO: 288.1206, found: 288.1212.

![Structure of 5-fluoro-3-(3,3,3-trifluoropropyl)-1,3-dimethylindolin-2-one (2j)](structure_image)

**5-fluoro-3-(3,3,3-trifluoropropyl)-1,3-dimethylindolin-2-one (2j)**

Compound 2j was obtained according to the general procedure as a white solid in 80% yield after flash chromatography (PE /EtOAc = 10:1, V/V). $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ =7.01 (dd, $J = 8.8$ Hz, 2.4 Hz, 1 H), 6.95 (dd, $J = 7.6$ Hz, 2.4 Hz, 1 H), 6.80 (dd, $J = 8.4$ Hz, 4.0 Hz, 1 H), 3.22 (s, 3H), 2.17 (dt, $J = 1.28$ Hz, 4.0 Hz, 1 H), 1.80-1.92 (m, 2 H), 1.65-1.73 (m, 1H), 1.40 (s, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$): $\delta$ = 178.9, 159.5 (d, $J = 240.2$ Hz), 139.0 (d, $J = 1.5$ Hz), 134.2 (d, $J = 7.1$ Hz), 126.6 (q, $J$ = 274.5 Hz), 110.7 (d, $J = 24.6$ Hz), 108.8 (d, $J = 8.0$ Hz), 47.4, 39.7, 30.0 (q, $J = 2.5$ Hz), 29.3 (q, $J = 29.3$ Hz), 26.3, 23.5. $^{19}$F NMR (470 MHz, CDCl$_3$) $\delta$ = -66.6 (t, $J = 10.3$ Hz, 3 F), -119.9 (s, 1 F). HRMS: calc. for [M+H]$^+$ C$_{13}$H$_{14}$F$_4$NO: 276.1006, found: 276.1010.
5-bromo-3-(3,3,3-trifluoropropyl)-1,3-dimethylindolin-2-one (2l)

Compound 2l was obtained according to the general procedure as a white solid in 78% yield after flash chromatography (PE/EtOAc = 10:1, V/V). $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ =7.43 (dd, $J$ = 8.0 Hz, 1.6 Hz, 1 H), 7.30 (d, $J$ = 1.6 Hz, 1 H), 6.76 (d, $J$ = 8.4 Hz, 1 H), 3.21 (s, 3H), 2.17 (dt, $J$ = 1.32 Hz, 4.0 Hz, 1 H), 1.68-1.97 (m, 3 H), 1.40 (s, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$): $\delta$ = 178.7, 142.2, 134.7, 131.3, 126.6 (q, $J$ = 274.5 Hz), 125.8, 115.7, 109.8, 47.2, 30.0 (q, $J$ = 3.6 Hz), 29.3 (q, $J$ = 29.3 Hz), 26.3, 23.5. $^{19}$F NMR (470 MHz, CDCl$_3$) $\delta$ = -66.48 (t, $J$ = 10.3 Hz, 3 F). HRMS: calc. for [M+H]$^+$ C$_{13}$H$_{14}$BrF$_3$NO: 336.0206, found: 336.0207.

5-chloro-3-(3,3,3-trifluoropropyl)-1,3-dimethylindolin-2-one (2k)

Compound 2k was obtained according to the general procedure as a white solid in 83% yield after flash chromatography (PE/EtOAc = 10:1, V/V). $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ =7.29 (dd, $J$ = 8.0 Hz, 2.0 Hz, 1 H), 7.17 (d, $J$ = 2.0 Hz, 1 H), 6.80 (d, $J$ = 8.4 Hz, 1 H), 3.21 (s, 3H), 2.17 (dt, $J$ = 1.32 Hz, 4.4 Hz, 1 H), 1.65-1.97 (m, 3 H), 1.40 (s, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$): $\delta$ = 178.8, 141.7, 134.3, 128.4, 128.38, 126.6 (q, $J$ = 274.3 Hz), 123.1, 109.3, 47.2, 30.1 (q, $J$ = 3.4 Hz), 29.3 (q, $J$ = 28.4 Hz), 26.4, 23.5. $^{19}$F NMR (470 MHz, CDCl$_3$) $\delta$ = -66.5 (t, $J$ = 10.3 Hz, 3 F). HRMS: calc. for [M+H]$^+$ C$_{13}$H$_{14}$ClF$_3$NO: 292.0711, found: 292.0715.

3-(3,3,3-trifluoropropyl)-1,3-dimethyl-2-oxoindoline-5-carbonitrile (2m)

Compound 2m was obtained according to the general procedure as a white solid in 72% yield after flash chromatography (PE/EtOAc = 10:1, V/V). $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ =7.66 (dd, $J$ = 8.0 Hz, 2.0 Hz, 1 H), 7.46 (s, 1 H), 6.96 (d, $J$ = 8.0 Hz, 1 H),
3.27 (s, 3H), 2.19 (dt, $J = 1.32$ Hz, 4.4 Hz, 1 H), 1.69-2.00 (m, 3 H), 1.43 (s, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$): $\delta$ = 179.0, 146.9, 133.8, 133.7, 126.4 (q, $J = 274.3$ Hz), 125.9, 118.9, 108.8, 106.2, 46.7, 30.0 (q, $J = 2.3$ Hz), 29.1 (q, $J = 30.5$ Hz), 26.5, 23.3. $^{19}$F NMR (470 MHz, CDCl$_3$) $\delta$ = -66.5 (t, $J = 10.8$ Hz, 3 F). HRMS: calc. for [M+H]$^+$ C$_{14}$H$_{14}$F$_3$N$_2$O: 283.1053, found: 283.1057.

5-(trifluoromethyl)-3-(3,3,3-trifluoropropyl)-1,3-dimethylindolin-2-one (2n)

Compound 2n was obtained according to the general procedure as a white solid in 77% yield after flash chromatography (PE /EtOAc = 10:1, V/V). $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ 7.60 (d, $J = 8.0$ Hz, 1H), 7.43 (s, 1 H), 6.95 (d, $J = 8.0$ Hz, 1 H), 3.27 (s, 3 H), 2.20 (dt, $J = 13.2$ Hz, 4.8 Hz, 1 H), 1.98 (dt, $J = 1.32$ Hz, 4.8 Hz, 1 H), 1.82-1.92 (m, 1 H), 1.70-1.79 (m, 1 H), 1.44 (s, 3 H); $^{13}$C NMR (125 MHz, CDCl$_3$): $\delta$ = 179.2, 146.1, 133.3, 126.5 (d, $J = 274.5$ Hz), 126.3 (q, $J = 3.1$ Hz), 125.1 (q, $J = 32.4$ Hz), 124.3 (q, $J = 269.8$ Hz), 119.5 (q, $J = 4.0$ Hz), 108.1, 46.9, 30.0 (d, $J = 2.4$ Hz), 29.2 (q, $J = 29.6$ Hz), 26.4, 23.3. $^{19}$F NMR (470 MHz, CDCl$_3$) $\delta$ = -61.5 (s, 3 F), -66.6 (t, $J = 10.3$ Hz, 3 F). HRMS: calc. for [M+H]$^+$ C$_{14}$H$_{14}$F$_3$NO: 326.0974, found: 326.0979.

3-(3,3,3-trifluoropropyl)-1,3,7-trimethylindolin-2-one (2o)

Compound 2o was obtained according to the general procedure as a white solid in 70% yield after flash chromatography (PE /EtOAc = 10:1, V/V). $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 6.96-7.03 (m, 3H), 3.50 (s, 3H), 2.59 (s, 3H), 2.16 (dt, $J = 1.32$ Hz, 4.4 Hz, 1 H), 1.91 (dt, $J = 13.2$ Hz, 4.4 Hz, 1 H), 1.74-1.86 (m, 1H), 1.62-1.71 (m, 1H), 1.37 (s, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$): $\delta$ = 180.1, 140.9, 133.2, 132.0, 126.8 (q, $J = 274.5$ Hz), 122.9, 120.3, 120.0, 46.3, 30.4 (q, $J = 2.63$ Hz), 29.5, 29.3 (q, $J = 28.7$ Hz).
7-chloro-3-(3,3,3-trifluoropropyl)-1,3-dimethylindolin-2-one (2p)

Compound 2p was obtained according to the general procedure as a white solid in 68% yield after flash chromatography (PE/EtOAc = 10:1, V/V). \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 7.22\) (dd, \(J = 1.2\) Hz, 8.0 Hz, 1H), 7.07 (dd, \(J = 1.2\) Hz, 8.0 Hz, 1H), 7.01 (t, \(J = 8.0\) Hz, 1H), 3.59 (s, 3H), 2.18 (dt, \(J = 1.32\) Hz, 4.4 Hz, 1H), 1.92 (dt, \(J = 1.32\) Hz, 4.4 Hz, 1H), 1.79-1.89 (m, 1H), 1.64-1.72 (m, 1H), 1.39 (s, 3H); \(^13\)C NMR (125 MHz, CDCl\(_3\)): \(\delta = 179.5, 139.0, 135.4, 130.7, 126.6\) (q, \(J = 274.5\) Hz), 123.7, 120.9, 115.3, 46.7, 30.3 (q, \(J = 3.0\) Hz), 29.5, 29.2 (q, \(J = 28.5\) Hz), 23.9. \(^19\)F NMR (470 MHz, CDCl\(_3\)) \(\delta = -66.55\) (t, \(J = 11.8\) Hz, 3 F). HRMS: calc. for [M+H]\(^+\) \(C_{14}H_{17}F_3NO\): 272.1257, found: 272.1255.

7-fluoro-3-(3,3,3-trifluoropropyl)-1,3-dimethylindolin-2-one (2q)

Compound 2q was obtained according to the general procedure as a white solid in 65% yield after flash chromatography (PE/EtOAc = 10:1, V/V). \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 7.02-7.05\) (m, 2H), 6.96-7.00 (m, 1H), 3.43 (s, 3H), 2.17 (dt, \(J = 1.37\) Hz, 4.1 Hz, 1H), 1.83-1.97 (m, 2 H), 1.67-1.73 (m, 1H), 1.40 (s, 3H); \(^13\)C NMR (125 MHz, CDCl\(_3\)): \(\delta = 178.9, 147.8\) (d, \(J = 242.9\) Hz), 135.5, 129.7 (d, \(J = 8.0\) Hz), 126.7 (q, \(J = 274.5\) Hz), 123.5 (d, \(J = 6.4\) Hz), 118.2 (d, \(J = 2.4\) Hz), 116.4 (d, \(J = 19.4\) Hz), 47.3, 30.3 (q, \(J = 2.5\) Hz), 29.3 (q, \(J = 28.5\) Hz), 28.7 (d, \(J = 6.6\) Hz), 23.8. \(^19\)F NMR (470 MHz, CDCl\(_3\)) \(\delta = -66.6\) (t, \(J = 10.3\) Hz, 3 F), -136.1 (s, 1 F). HRMS: calc. for [M+H]\(^+\) \(C_{13}H_{14}F_3NO\): 276.1006, found: 276.1008.
3-(3,3,3-trifluoropropyl)-1,3,4-trimethylindolin-2-one \((2r)\) and 3-(3,3,3-trifluoropropyl)-1,3,6-trimethylindolin-2-one \((2r')\)

Compound \(2r\) and \(2r'\) were obtained according to the general procedure as an oil in 74% yield after flash chromatography (PE /EtOAc = 10:1, V/V). \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 7.20\) (t, \(J = 8.0\) Hz, 1 H), 7.06 (d, \(J = 7.6\) Hz, 0.6 H), 6.91(d, \(J = 7.6\) Hz, 0.6 H), 6.86 (d, \(J = 7.6\) Hz, 1 H ), 6.72 (s, 0.6 H ), 6.70 (d, \(J = 2.8\) Hz, 1 H ), 3.22 (s, 6 H), 3.21 (s, 3 H), 3.20 (s, 1.8 H), 240 (s, 1.8 H), 2.38 (s, 3 H), 2.11-2.29 (m, 3 H), 1.65-1.95 (m, 3 H), 1.48 (s, 3 H), 1.38 (s, 1.8 H); \(^1\)C NMR (125 MHz, CDCl\(_3\)): \(\delta = 179.7, 179.3, 143.4, 143.2, 138.5, 134.3, 129.6, 128.9, 128.3, 126.82\) (q, \(J = 273.9\) Hz), 126.79 (q, \(J = 274.4\) Hz), 125.5, 123.4, 122.2, 109.3, 106.1, 48.1, 46.8, 30.0 (d, \(J = 3.6\) Hz), 29.6 (q, \(J = 28.6\) Hz), 28.1 (d, \(J = 2.5\) Hz), 26.3, 26.2, 23.7, 22.1, 21.8, 18.0. \(^1\)F NMR (470 MHz, CDCl\(_3\)) \(\delta = -66.52\) (s, 1.8 F), -66.54 (s, 3 F). HRMS: calc. for [M+H]\(^+\) \(C_{14}H_{17}F_3NO\): 272.1257, found: 272.1253.

3-(3,3,3-trifluoropropyl)-1,3,4,6-tetramethylindolin-2-one \((2s)\)

Compound \(2s\) was obtained according to the general procedure as a white solid in 80% yield after flash chromatography (PE /EtOAc = 10:1, V/V). \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 6.68\) (s, 1 H), 6.54 (s, 1 H), 3.19 (s, 3 H), 2.35 (s, 3 H), 2.33 (s, 3 H), 2.12-2.26 (m, 2 H), 1.68-1.72 (m, 1 H), 1.48-1.57 (m, 1 H), 1.46 (s, 3 H); \(^1\)C NMR (125 MHz, CDCl\(_3\)): \(\delta = 179.7, 143.6, 138.4, 133.9, 126.8\) (q, \(J = 274.5\) Hz), 126.0, 125.9, 107.1, 47.9, 29.6 (q, \(J = 28.8\) Hz), 28.2 (q, \(J = 2.4\) Hz), 26.3, 22.2, 21.5, 17.9. \(^1\)F NMR (470 MHz, CDCl\(_3\)) \(\delta = -66.5\) (t, \(J = 10.3\) Hz, 3 F). HRMS: calc. for [M+H]\(^+\) \(C_{14}H_{19}F_3NO\): 286.1413, found: 286.1409.
3-(3,3,3-trifluoropropyl)-1,3-dimethyl-1H-benzo[g]indol-2(3H)-one (2t)

Compound 2t was obtained according to the general procedure as a white solid in 65% yield after flash chromatography (PE/EtOAc = 10:1, V/V). $^1$H NMR (400 MHz, CDCl$_3$): δ 7.76 (d, $J$ = 8.4 Hz, 1H), 7.53-7.59 (m, 2 H), 7.42-7.47 (m, 2 H), 6.97 (d, $J$ = 7.2 Hz, 1 H), 3.55 (s, 3 H), 2.67 (dt, $J$ = 1.32 Hz, 4.8 Hz, 1 H), 2.12 (dt, $J$ = 1.32 Hz, 4.8 Hz, 1 H), 1.92-1.96 (m, 1 H), 1.72-1.78 (m, 1H), 1.68 (s, 3 H); $^{13}$C NMR (125 MHz, CDCl$_3$): δ 172.2, 136.6, 136.4, 133.5, 127.3, 126.9 (q, $J$ = 274.1 Hz), 126.6, 122.8, 122.5, 119.5, 108.8, 46.6, 34.8, 31.6, 30.2, 29.8. $^{19}$F NMR (470 MHz, CDCl$_3$) δ = -66.4 (t, $J$ = 10.8 Hz, 3 F). HRMS: calc. for [M+H]$^+$ C$_{17}$H$_{17}$F$_3$NO: 308.1257, found: 308.1262.

1-(3,3,3-trifluoropropyl)-5,6-dihydro-1-methyl-1H-pyrrolo[3,2,1-ij]quinolin-2(4H)-one (2u)

Compound 2u was obtained according to the general procedure as a white solid in 73% yield after flash chromatography (PE/EtOAc = 10:1, V/V). $^1$H NMR (400 MHz, CDCl$_3$): δ = 6.95–7.06 (m, 3H), 3.72 (t, $J$ = 6.0 Hz, 2H), 2.80 (t, $J$ = 6.0 Hz, 2H), 2.11–2.19 (m, 2H), 1.98–2.04 (m, 2H), 1.83–1.93 (m, 2H), 1.70–1.79 (m, 1H), 1.40 (s, 3H); $^{13}$C NMR (125 MHz, CDCl$_3$): δ = 178.3, 138.9, 131.1, 127.1, 126.8 (q, $J$ = 274.4 Hz), 122.4, 120.4, 120.3, 48.3, 38.8, 29.9 (d, $J$ = 2.0 Hz), 29.4 (q, $J$ = 28.9 Hz), 24.6, 23.3, 21.2. $^{19}$F NMR (470 MHz, CDCl$_3$) δ = -66.5 (t, $J$ = 10.3 Hz, 3 F). HRMS: calc. for [M+H]$^+$ C$_{15}$H$_{17}$F$_3$NO: 284.1257, found: 284.1260.

Reference

Copies of $^1$H NMR, $^{13}$C NMR and $^{19}$F NMR Spectra of Compounds
$^{1}H$ NMR Spectra of 2a

$^{13}C$ NMR Spectra of 2a

$^{19}F$ NMR Spectra of 2a
$^1$H NMR Spectra of 2b

$^{13}$C NMR Spectra of 2b

$^{19}$F NMR Spectra of 2b
$^1$H NMR Spectra of 2c

$^{13}$C NMR Spectra of 2c

$^{19}$FNMR Spectra of 2c
$^1$H NMR Spectra of 2d

$^{13}$C NMR Spectra of 2d

$^{19}$F NMR Spectra of 2d
$^1$H NMR Spectra of 2e

$^{13}$C NMR Spectra of 2e

$^{19}$F NMR Spectra of 2e
$^{1}H$ NMR Spectra of 2f

$^{13}C$ NMR Spectra of 2f

$^{19}F$ NMR Spectra of 2f
\(^1\)H NMR Spectra of 2h

\(^{13}\)C NMR Spectra of 2h

\(^{19}\)F NMR Spectra of 2h
$^1$H NMR Spectra of 2i

$^{13}$C NMR Spectra of 2i

$^{19}$F NMR Spectra of 2i
$^1$H NMR Spectra of 2j

$^{13}$C NMR Spectra of 2j

$^{19}$F NMR Spectra of 2j
$^1$H NMR Spectra of 2k

$^{13}$C NMR Spectra of 2k

$^{19}$F NMR Spectra of 2k
$^1$H NMR Spectra of 2l

$^{13}$C NMR Spectra of 2l

$^{19}$F NMR Spectra of 2l
$^1$H NMR Spectra of 2m

$^{13}$C NMR Spectra of 2m

$^{19}$F NMR Spectra of 2m
$^1$H NMR Spectra of 2n

$^{13}$C NMR Spectra of 2n

$^{19}$F NMR Spectra of 2n
$^1$H NMR Spectra of 2o

$^{13}$C NMR Spectra of 2o

$^{19}$F NMR Spectra of 2o
$^1$H NMR Spectra of 2p

$^{13}$C NMR Spectra of 2p

$^{19}$F NMR Spectra of 2p
$^1$H NMR Spectra of 2n

$^{13}$C NMR Spectra of 2q

$^{19}$F NMR Spectra of 2q
$^1$H NMR Spectra of 2r+2r$^r$

$^{13}$C NMR Spectra of 2r+2r$^r$

$^{19}$F NMR Spectra of 2r+2r$^r$
$^{1}H$ NMR Spectra of 2s

$^{13}C$ NMR Spectra of 2s

$^{19}F$ NMR Spectra of 2s
$^1$H NMR Spectra of 2u

$^{13}$C NMR Spectra of 2u

$^{19}$F NMR Spectra of 2u