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Synthesis of Indolobenzazepinones by Application of an Isocyanide-Based Multicomponent Reaction

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Application of a Ugi multicomponent reaction to oxo acids **4** allows the formation of potentially antimitotic indolobenzazepinones of type **5** in good yields of up to 72%, whereas the same transformation from the starting substrate **6** gives access to analogues of paullone with yields of up to 89%. The reaction could be applied to a wide range of isocyanides, thereby ensuring introduction of molecular diversity at the key C-5 position. Use of cyclohexenyl isocyanide allows post-condensation modifications, while careful choice of the amine and the indole protecting groups proved to be important for providing the deprotected compounds necessary for biological tests.
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Introduction

Multicomponent reactions (MCRs) are convergent methods highly useful when the generation of molecular diversity is needed, in the context of, for example, a structure/activity relationship study.[1] In a single step, the combination of up to six starting materials can lead to the formation of a wide variety of functionalized molecules through a cascade of elementary steps. Of the various available protocols, the isocyanide-based multicomponent reaction offers by far the greatest synthetic potential in terms of diversity and versatility, a consequence of the unique reactivity of this function.[2] The well-known Ugi four-component reaction[3] (4-CR) – involving sequential condensation between an amine, a carbonyl compound, an isocyanide, and a carboxylic acid – allows introduction of diversity through variation of the substitution pattern on each reagent. This transformation has thus been successfully applied to the preparation of numerous heterocyclic scaffolds[4] that sometimes display biological activities,[5] as well as of natural products and their derivatives.[6] More interestingly, intramolecular Ugi 4-CRs based on the use of bifunctional reagents such as oxo acids or β-amino acids allow access to a wide range of novel heterocycles.[7]

In the context of a medicinal chemistry project directed towards finding new antitumor agents, we were prompted to prepare indolobenzazepinone derivatives of type **1**, the pyrrolo[2,3-*c*]azepinone core of which can be found in several natural products such as latonduine (**2**)[8] and the $C_{11}N_5$ marine sponge bromo alkaloids represented by hymenialdisine (**3**).[9,10] We demonstrated that compounds of type **1** display potent antimitotic properties in the micromolar range as a consequence of tubulin polymerization inhibition.[11] In particular, it was found that the presence of an alkyl side chain at the C-5 position is crucial in order to obtain cytotoxic effects in the nanomolar range (Figure 1).

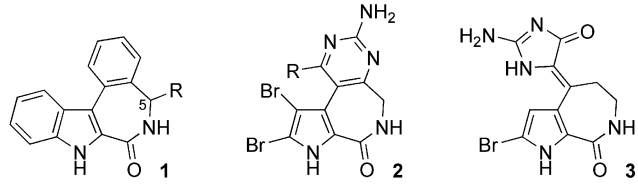
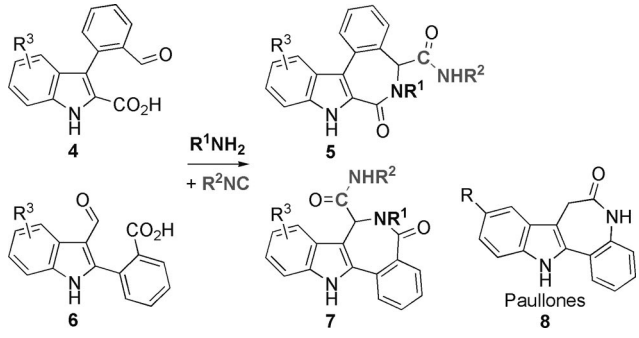


Figure 1. Structures of compounds **1**–**3**.

This observation prompted us to screen various alkyl substituents at C5, and it occurred to us that application of an intramolecular Ugi 4-CR from a starting indole-derived oxo acid of type **4** could offer new opportunities for generating molecular diversity at this position.[12] In particular,



Scheme 1. Intramolecular Ugi 4-CRs for the preparation of indolobenzazepinones of type **5** and **7**.

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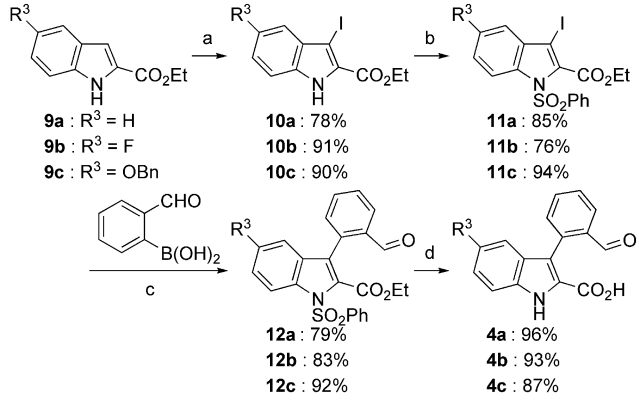
such modifications should be possible through variation of the starting isocyanide, a large variety of which are commercially available (Scheme 1). We also envisaged that use of the isomeric oxo acid **6** should afford a different type of indolobenzazepinone **7**, which can be regarded as analogues of paullones **8**, another class of heterocyclic products that display potent antitumor properties.[13] We therefore wish to describe here the application of an isocyanide-based multicomponent reaction to the preparation of indolobenzazepinones of therapeutic interest.

Results and Discussion

Initial efforts were concentrated on the preparation of starting oxo acids **4** with different substituents at the C-5 position in the indole nucleus. These were prepared in four steps from the commercially available ethyl indole-2-carboxylates **9** (Scheme 2). Iodination under basic conditions, followed by protection of the indole nitrogen with benzenesulfonyl chloride, afforded compounds **11** in good yields.[14] Suzuki coupling of **11** with 2-formylbenzeneboronic acid, catalyzed by $Pd(OAc)_2$ (3 mol-%) in the presence of dppf (4.5 mol-%) and cesium fluoride (4 equiv.),[15] thus led to the formation of biaryl derivatives **12** with yields in the 79–92% range. Finally, concomitant saponification and removal of the sulfonyl protecting group with LiOH (1 M) gave the expected intermediates **4**, which were used without purification.



Scheme 2. Synthesis of oxo acids **4**. Reagents and conditions: a) KOH (3.8 equiv.), I_2 (1 equiv.), DMF, room temp., 45 min; b) $PhSO_2Cl$ (2 equiv.), NaH (1.5 equiv.), THF, room temp., 16 h; c) $Pd(OAc)_2$ (3 mol-%), dppf (4.5 mol-%), CsF (4 equiv.), dioxane, 80 °C, 3–5 h; d) LiOH (1 M, 5 equiv.), THF, 60 °C, 16 h.

Compounds **4a**–**c** were engaged in intramolecular Ugi 4-CRs – based on the optimized conditions developed by Ivachtchenko et al. for the synthesis of thiazepines starting from oxo acids[7b] – with a variety of isocyanides and primary amines (Figure 2). We were pleased to observe that the reactions occur smoothly without any protecting group on the indole moiety. The corresponding indolobenzazepinones **5a**–**s** were thus isolated with moderate to good yields in the 32–78% range (Table 1), the best results being observed with indole derivatives **4a** and **4c** (Entries 1–13 and 18–19), while the presence of a fluorine at C-5 (i.e., compound **4b**) slightly decreases the reactivity (Entries 14, 16, 17 vs. 8, 10, 12, respectively).

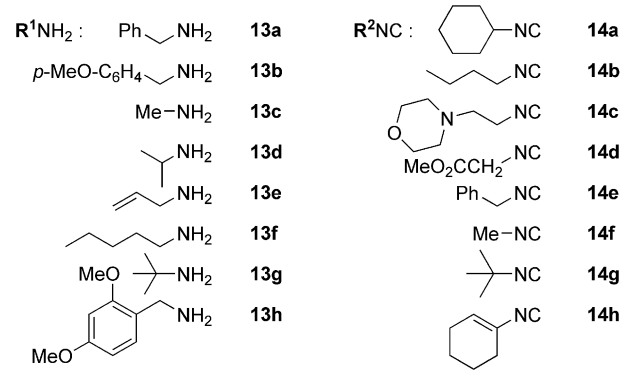
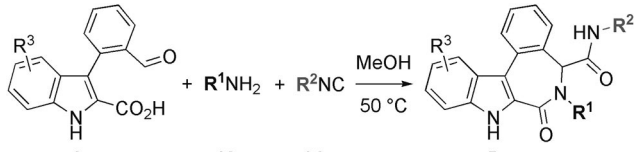


Figure 2. Amines and isocyanides used for intramolecular Ugi 4-CRs.

Table 1. Intramolecular Ugi 4-CRs starting from oxo acid **4**.



Entry	R^1NH_2	R^2NC	R^3	Product	Yield[a]
1	Bn: **13a**	Cy: **14a**	H: **4a**	**5a**	51
2	PMB: **13b**	*n*-C_4H_9: **14b**	H: **4a**	**5b**	56
3	Me: **13c**	morpholine: **14c**	H: **4a**	**5c**	33
4	*i*Pr: **13d**	morpholine: **14c**	H: **4a**	**5d**	48
5	allyl: **13e**	morpholine: **14c**	H: **4a**	**5e**	40
6	*n*-C_5H_{11}: **13f**	morpholine: **14c**	H: **4a**	**5f**	54
7	*t*Bu: **13g**	*n*-C_4H_9: **14b**	H: **4a**	**5g**	55
8	*t*Bu: **13g**	morpholine: **14c**	H: **4a**	**5h**	56
9	*t*Bu: **13g**	ester: **14d**	H: **4a**	**5i**	37
10	*t*Bu: **13g**	Bn: **14e**	H: **4a**	**5j**	57
11	*t*Bu: **13g**	Me: **14f**	H: **4a**	**5k**	41
12	*t*Bu: **13g**	*t*Bu: **14g**	H: **4a**	**5l**	63
13	*t*Bu: **13g**	cyclohexene: **14h**	H: **4a**	**5m**	32
14	*t*Bu: **13g**	morpholine: **14c**	F: **4b**	**5n**	39
15	*t*Bu: **13g**	ester: **14d**	F: **4b**	**5o**	38
16	*t*Bu: **13g**	Bn: **14e**	F: **4b**	**5p**	52
17	*t*Bu: **13g**	*t*Bu: **14g**	F: **4b**	**5q**	52
18	*t*Bu: **13g**	morpholine: **14c**	BnO: **4c**	**5r**	56
19	*t*Bu: **13g**	*t*Bu: **14g**	BnO: **4c**	**5s**	78

[a] Isolated yields after flash chromatography on silica gel.

X-ray crystallography of racemic **5l** allowed us to confirm the structures of the indolobenzazepinones (Figure 3).

The reactions were found to occur either with benzylamines or a variety of linear (methyl, allyl, *n*-C_5H_{11}) and branched (*i*Pr, *t*Bu) alkylamines, while a wide range of substituted isocyanide components could be introduced without diminishing the yields. More interestingly, the cyclohexenyl analogue **5m** allows postcondensation modifications at the C-5 position. Ugi was the first to prepare 1-isocyanocyclohexene (**14h**), which was then used in a multicomponent

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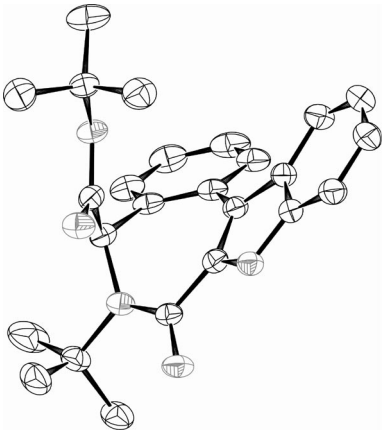
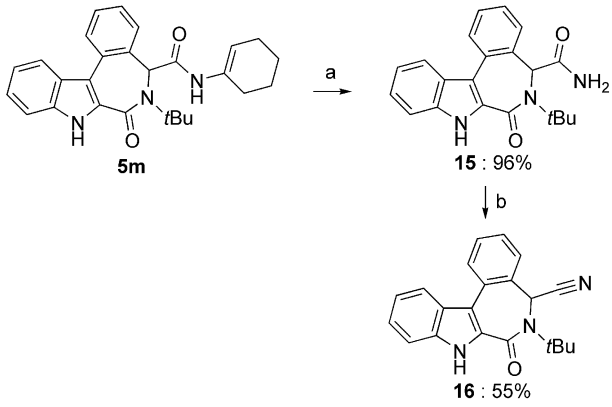


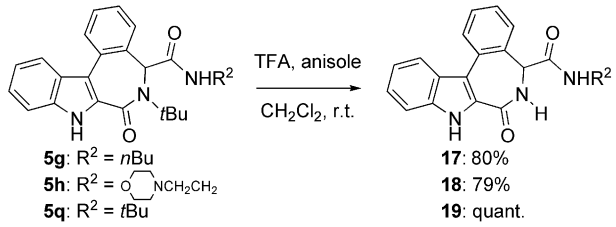
Figure 3. X-ray structure of indolobenzazepinone **5l**.

reaction.[16] The resulting cyclohexenamide could be deprotected under acidic conditions to afford the primary amide, and Armstrong later extended the versatility of this isocyanide by describing conditions that led variously to acids, esters, or thioesters.[17] In our hands, the cyclohexenamide **5m** was efficiently transformed into the primary amide **15** by treatment with acetyl chloride in methanol, whereas Swern oxidation of **15** provided the cyano derivative **16** (Scheme 3).



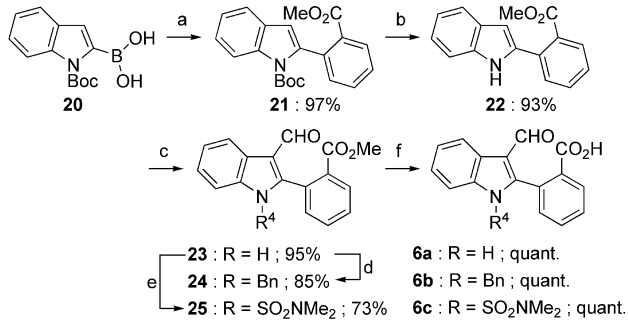
Scheme 3. Postcondensation modifications of **5m**. Reagents and conditions: a) AcCl (5 equiv.), CH_3OH, room temp., 30 min; b) DMSO (2.4 equiv.), oxalyl chloride (1.3 equiv.), Et_3N (5 equiv.), CH_2Cl_2, –78 °C, 4 h.

Finally, because the best biological activities observed in our previous study had been with free 6-NH indolobenzazepinones of type **1**,[11] use of *tert*-butylamine in the Ugi 4-CR proved to be optimal, because it affords protected lactams **5g**–**s**, the deprotection of which occurs smoothly at room temperature in the presence of trifluoroacetic acid and anisole in dichloromethane. As examples, the *tert*-butyl lactams **5g** and **5h** were transformed into products **17** and **18** in 80% and 79% yields, respectively (Scheme 4). Surprisingly, selective deprotection was observed in the case of di-*tert*-butyl compound **5q**, to afford a quantitative yield of the mono-*tert*-butyl amide **19**. However, application of the Ugi 4-CR also allowed us to discover that substitution at the N-6 position is indeed well tolerated as far as antimitotic activity is concerned.[18] This can thus be fine-tuned by modifications either of the starting amine or of the isocyanide.



Scheme 4. Deprotection of *tert*-butyl lactams.

We then turned our attention to the synthesis of indolobenzazepinones of type **7**, which may be regarded as isomeric analogues of paullones **8**. Preparation of the required oxo acid **6** started from the commercially available *N*-(Boc)-indole-2-boronic acid (**20**, Scheme 5). Suzuki coupling with methyl *o*-iodobenzoate afforded the 2-arylindole derivative **21** in an excellent yield of 97%. The *N*-Boc protecting group was then removed under acidic conditions, before a Vilsmeier–Haack formylation of **22** with $POCl_3$ and *N*-methylformanilide that efficiently led to the expected aldehyde **23**.[19] The ester was finally saponified with aqueous lithium hydroxide to give the target compound **6a** in quantitative yield.



Scheme 5. Synthesis of oxo acids **6**. Reagents and conditions: a) methyl *o*-iodobenzoate (1 equiv.), $Pd(PPh_3)_4$ (5 mol-%), Na_2CO_3 (2 M, 4.2 equiv.), DME, reflux, overnight; b) TFA (2 equiv.), CH_2Cl_2, room temp., overnight; c) $POCl_3$ (1.5 equiv.), *N*-methylformanilide (1.5 equiv.), $ClCH_2CH_2Cl$, reflux; d) BnBr (2 equiv.), NaH (1.5 equiv.), THF, room temp.; e) *N*,*N*-dimethylsulfamoyl chloride (2 equiv.), NaH (1.5 equiv.), THF, room temp.; f) LiOH (1 M, 5 equiv.), THF, 60 °C, 16 h.

Contrarily to what had been observed with the formation of compounds **5**, intramolecular Ugi 4-CRs with deprotected indole substrates of type **6** did not occur efficiently. Treatment of compound **6a** with *tert*-butylamine (**13g**) and *tert*-butyl isocyanide (**14g**) thus afforded indolobenzazepinone **7a** in a very low yield of 8% even after 2 d in methanol at 50 °C (Entry 1, Table 2), while the same reagents with substrate **4a** had led to indolobenzazepinone **5l** in a good yield of 63% (Entry 12, Table 1). Changing solvents (THF, trifluoroethanol) did not improve the results. However, a net increase in reactivity was observed when a more elec-

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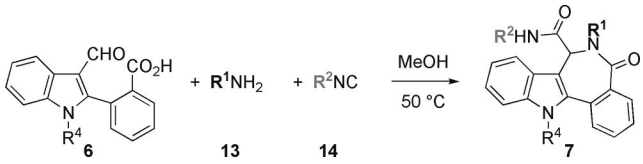
tron-rich amine was used, the reaction with *p*-methoxybenzylamine affording the expected product **7b** in 58% yield (Entry 2).

Table 2. Intramolecular Ugi 4-CRs starting from oxo acid **6**.

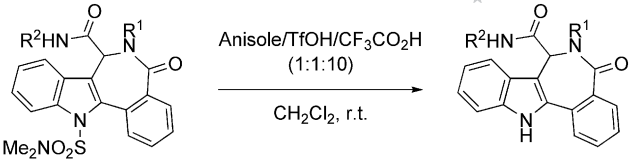


Entry	R^1NH_2	R^2NC	R^4	Product	Yield[a]
1	*t*Bu: **13g**	*t*Bu: **14g**	H: **6a**	**7a**	8
2	PMB: **13b**	*t*Bu: **14g**	H: **6a**	**7b**	58
3	*t*Bu: **13g**	*t*Bu: **14g**	Bn: **6b**	**7c**	traces
4	PMB: **13b**	*t*Bu: **14g**	Bn: **6b**	**7d**	60
5	*t*Bu: **13g**	*t*Bu: **14g**	SO_2NMe_2: **6c**	**7e**	traces
6	PMB: **13b**	*t*Bu: **14g**	SO_2NMe_2: **6c**	**7f**	77
7	allyl: **13e**	*t*Bu: **14g**	SO_2NMe_2: **6c**	**7g**	83
8	DMB: **13h**	*t*Bu: **14g**	SO_2NMe_2: **6c**	**7h**	89
9	H	*t*Bu: **14g**	SO_2NMe_2: **6c**	**7i**	44
10	H	Bn: **14e**	SO_2NMe_2: **6c**	**7j**	49
11	H	*n*-C_4H_9: **14b**	SO_2NMe_2: **6c**	**7k**	47

[a] Isolated yields after flash chromatography on silica gel.

We then studied the case of protected indolic substrates that were accessible by simple protection of compound **23**. This was treated with benzyl bromide or *N*,*N*-dimethylsulfamoyl chloride to afford the *N*-protected derivatives **24** and **25**, respectively, in 85 and 73% yields. Saponification with aqueous LiOH led to acids **6b** and **6c**, again in quantitative yields.[20] These were then engaged in intramolecular Ugi 4-CRs. As in the case of unprotected indole **6a**, treatment of **6b** and **6c** with *tert*-butylamine (**13g**) and *tert*-butyl isocyanide (**14g**) did not give satisfactory results (Entries 3 and 5), with only traces of the expected products being obtained.[21] However, indole **6b** proved to be as reactive with *p*-methoxybenzylamine (**13b**) as the unprotected oxo acid **6a** had been, the indolobenzazepinone **7d** being isolated with a similar yield of 60% (Entry 4). More interestingly, though, we found that use of the *N*,*N*-dimethylsulfamoyl analogue **6c** significantly improved results, with product **7f** being obtained in a better yield of 77% (Entry 6). Yields were further improved by the use of allylamine (**13e**) and 2,4-dimethoxybenzylamine (**13h**), with the corresponding indolobenzazepinones **7g** and **7h** being formed in 83% and 89% yields, respectively (Entries 7 and 8).

Deprotection of the Ugi 4-CR products **7** was then investigated. We first concentrated on the removal of the dimethylsulfamoyl group, since we had previously demonstrated that this can be cleaved under acidic conditions by use of a 1:1:10 mixture of anisole/trifluoromethanesulfonic acid/trifluoroacetic acid.[22] Application of these conditions to indolobenzazepinone **7d** thus afforded the free NH-indole derivative **26** in 86% yield (Scheme 6), while the PMB group and *tert*-butyl amide surprisingly proved to be resistant.



7d: R^1 = PMB, R^2 = *t*Bu
7i: R^1 = H, R^2 = *t*Bu
7j: R^1 = H, R^2 = Bn

26: 86%
27: 71%
28: 93%

Scheme 6. Deprotection of indolobenzazepinones **7**.

Removal of the PMB group of **26** was then attempted in order to provide derivatives suitable for biological studies. Despite many experiments, this group appeared resistant to cleavage either under oxidizing conditions (CAN, DDQ) or by catalytic hydrogenation. In order to circumvent this problem, we attempted to avoid the use of a protecting group altogether, by using ammonia in the Ugi 4-CR. We were thus very pleased to observe that the use of a solution of ammonia in ethanol (2 M) afforded the expected product **7i** in 38% yield, a result that was further improved by concentrating the reaction medium to 0.5 M. Under these conditions, treatment with *tert*-butyl, benzyl, and *n*-butyl isocyanides led to indolobenzazepinones **7i**, **7j**, and **7k**, respectively, in 44%, 49%, and 47% yields (Entries 9–11). Removal of the *N*,*N*-dimethylsulfamoyl groups from **7i** and **7j** by the acidic treatment described above finally afforded the expected deprotected paullone analogues **27** and **28** in 71% and 93% yields, respectively.

Conclusions

In conclusion, we have demonstrated that application of an intramolecular isocyanide-based multicomponent reaction gives access to indolobenzazepinones in good yields of up to 89%. Large molecular diversity can be generated in a single step, as well as by further modifications of cyclohexenamide derivatives such as **5m**. In particular, the wide variety of commercially available isocyanides should allow efficient screening of the substitution pattern at C5 crucial for the antimitotic activity of these indolobenzazepinones.[11] Moreover, the use of *tert*-butylamine or ammonia as the amine partner in the Ugi 4-CR has proven to be optimal for the subsequent isolation of the deprotected target products necessary for biological testing. However, this study also allowed us to find that introduction of substituents at the N-6 position has no detrimental effect on the antimitotic activity. These compounds are currently under investigation, and results will be reported in due course.

Experimental Section

General Remarks: Melting points, measured in capillary tubes and recorded with a Büchi B-540 melting point apparatus, are uncorrected. Infrared spectra were recorded on a Perkin–Elmer Spectrum BX FT-IR spectrometer. Optical rotations were determined with a JASCO *P*-1010 polarimeter. Proton (^1H) and carbon (^{13}C) NMR spectra were recorded on Bruker spectrometers: Avance 300

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NMR or 500 NMR (300 and 500 MHz, respectively). Chemical shifts (δ) are reported in parts per million (ppm) with reference to tetramethylsilane (TMS) as internal standard. NMR experiments were carried out in deuteriochloroform ($CDCl_3$) or in deuteriobenzene (C_6D_6). The following abbreviations are used for the proton spectra multiplicities: s: singlet, d: doublet, t: triplet, q: quartet, m: multiplet. Coupling constants (J) are reported in Hertz [Hz]. Mass spectra were obtained with an LCT (Micromass) instrument by electrospray ionization and with a Time of Flight (TOF) analyzer (ESI-MS) for high-resolution mass spectra (HRMS). Thin-layer chromatography was performed on silica gel 60 plates with a fluorescent indicator, with visualization under a UVP Mineralight UVGL-58 lamp (254 nm) and by use of a 7% solution of phosphomolybdic acid in ethanol. Flash chromatography was performed on silica gel 60 (40–63 μm, 230–400 mesh ASTM) at medium pressure (200 mbar). All solvents were distilled and stored over molecular sieves (4 Å) before use. All reagents were obtained from commercial suppliers unless otherwise stated. Organic extracts were, in general, dried with magnesium sulfate ($MgSO_4$) or sodium sulfate (Na_2SO_4). Elemental analyses were performed at the ICSN, CNRS, Gif-sur-Yvette, France.

General Procedure for the Synthesis of Ethyl 3-Iodo-1-phenylsulfonyl-1*H*-indole-2-carboxylates 11a–11c: A solution of the corresponding iodide (14.8 mmol, 1 equiv.) in THF (70 mL) was added at 0 °C under argon to a suspension of sodium hydride (892 mg, 22.3 mmol, 60% in oil, 1.5 equiv.) in dry THF (70 mL). The reaction mixture was stirred for 45 min, and benzenesulfonyl chloride (6.0 mL, 29.8 mmol, 2 equiv.) was added. The reaction mixture was allowed to warm to room temperature overnight. The solvent was removed in vacuo, and the residue was partitioned between CH_2Cl_2 (100 mL) and water (20 mL). The aqueous layer was extracted with CH_2Cl_2 (3 × 20 mL). The combined organic extracts were washed with water (40 mL) and an aqueous solution of $NaHCO_3$ (1 M, 2 × 20 mL), dried ($MgSO_4$), filtered, and concentrated in vacuo. The resulting brown oil was dissolved in hot hexane/Et_2O (1:1) and crystallized at 0 °C to give the ethyl 3-iodo-1-(phenylsulfonyl)-1*H*-indole-2-carboxylates.

Ethyl 3-Iodo-1-phenylsulfonyl-1*H*-indole-2-carboxylate (11a):[11] Yield 5.7 g (85%). White solid; m.p. 139 °C (hexane/Et_2O). ^{1}H NMR (250 MHz, $CDCl_3$, 25 °C): δ = 8.00 (d, J = 7.5 Hz, 3 H, Ar*H*), 7.60–7.30 (m, 6 H, Ar*H*), 4.54 (q, J = 7.1 Hz, 2 H, CH_3–CH_2), 1.48 (t, J = 7.1 Hz, 3 H, CH_3–CH_2) ppm. ^{13}C NMR (75 MHz, $CDCl_3$, 25 °C): δ = 161.7 (CO), 137.3 (C), 135.5 (C), 134.2 (Ar*C*H), 133.4 (C), 131.4 (C), 129.1 (2 × Ar*C*H), 127.4 (Ar*C*H), 127.3 (2 × Ar*C*H), 124.8 (Ar*C*H), 123.1 (Ar*C*H), 114.7 (Ar*C*H), 73.5 (CI), 62.8 (CH_3CH_2), 14.0 (CH_3CH_2) ppm. FTIR: $\tilde{\nu}$ = 3065, 1729, 1192, 726 cm^{-1}.

Ethyl 5-Fluoro-1-phenylsulfonyl-1*H*-3-iodoindole-2-carboxylate (11b):[11] Yield 5.3 g (76%). White solid; m.p. 111 °C (hexane/Et_2O). ^{1}H NMR ($CDCl_3$, 300 MHz, 25 °C): δ = 7.92–7.96 (m, 3 H), 7.56 (tt, J = 7.4, 2.1 Hz, 1 H, Ar*H*), 7.42–7.48 (m, 2 H, Ar*H*), 7.13 (td, J = 8.8, 2.6 Hz, 1 H, Ar*H*), 7.06 (dd, J = 8.8, 2.6 Hz, 1 H, Ar*H*), 4.52 (q, J = 7.2 Hz, 2 H, CH_3–CH_2), 1.45 (t, J = 7.2 Hz, 3 H, CH_3–CH_2) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 161.7 (CO), 160.0 (d, J = 238.5 Hz, CF), 137.3 (C), 134.6 (C), 129.1 (2 × Ar*C*H), 127.6 (2 × Ar*C*H), 116.5 (d, J = 9.3 Hz, Ar*C*H), 115.9 (d, J = 25.8 Hz, Ar*C*H), 109.1 (d, J = 24.7 Hz, Ar*C*H), 72.4 (CI), 63.2 (CH_3CH_2), 14.3 (CH_3CH_2) ppm. FTIR: $\tilde{\nu}$ = 1727, 1152 cm^{-1}.

Ethyl 5-Benzyloxy-3-iodo-1-phenylsulfonyl-1*H*-indole-2-carboxylate (11c): Yield 7.8 g (94%). White solid; m.p. 149 °C (hexane/Et_2O). ^{1}H NMR ($CDCl_3$, 300 MHz, 25 °C): δ = 7.89–7.92 (m, 3 H, Ar*H*), 7.53 (tt, J = 7.5, 2.1 Hz, 1 H, Ar*H*), 7.29–7.45 (m, 7 H, Ar*H*), 7.08 (dd, J = 9.0, 2.4 Hz, 1 H, Ar*H*), 6.88 (d, J = 2.4 Hz, 1 H, Ar*H*), 5.07 (s, 2 H, CH_2Ph), 4.51 (q, J = 7.2 Hz, 2 H, CH_3–CH_2), 1.45 (t, J = 7.2 Hz, 3 H, CH_3–CH_2) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 161.7 (CO), 156.7 (CO), 137.1 (C), 136.5 (C), 134.1 (Ar*C*H), 132.7 (C), 130.2 (C), 129.1 (2 × Ar*C*H), 128.6 (2 × Ar*C*H), 128.2 (Ar*C*H), 127.7 (2 × Ar*C*H), 127.4 (C), 127.3 (2 × Ar*C*H), 117.6 (Ar*C*H), 116.1 (Ar*C*H), 106.2 (Ar*C*H), 74.0 (CI), 70.6 (CH_2Ph), 62.8 (CH_3–CH_2), 14.1 (CH_3–CH_2) ppm. FTIR: $\tilde{\nu}$ = 1727, 1152 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{24}H_{20}INNaO_4S]^+$: 584.0005; found 584.0026.

General Procedure for Suzuki Cross-Coupling Reactions. Syntheses of Compounds 12a–12c: CsF (151.8 mg, 1.0 mmol, 4 equiv.) was fused under vacuum in a two-necked, round-bottomed flask. After the system had cooled to room temperature, 2-formylphenylboronic acid (75 mg, 0.5 mmol, 2 equiv.) and dry degassed dioxane (2.5 mL) were added under argon. The ethyl 3-iodoindole-2-carboxylate **11** (0.25 mmol, 1 equiv.), palladium diacetate (1.68 mg, 0.007 mmol, 3 mol-%), dppf (6.23 mg, 0.011 mmol, 4.5 mol-%), and dry degassed dioxane (5 mL) were placed in a second round-bottomed flask under argon. This second reaction mixture was stirred at room temperature for 30 min and was then added to the 2-formylbenzeneboronic acid by cannula. This mixture was stirred under argon at 80 °C until complete conversion of the starting indole. Ice-cooled water was then added, and the solution was extracted with CH_2Cl_2 (2 × 20 mL). The combined organic extracts were dried ($MgSO_4$) and filtered, and the solvents were evaporated. The residue was purified by flash chromatography on silica gel (heptane/EtOAc, 95:5 to 75:25).

Ethyl 3-(2-Formylphenyl)-1-phenylsulfonyl-1*H*-indole-2-carboxylate (12a): Yield 85.6 mg (79%). White foam. ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.67 (s, 1 H, C*H*O), 8.12 (d, J = 7.6 Hz, 1 H, Ar*H*), 8.04 (d, J = 7.6 Hz, 1 H, Ar*H*), 8.01 (d, J = 7.6 Hz, 1 H, Ar*H*), 7.61 (t, J = 7.6 Hz, 1 H, Ar*H*), 7.55 (t, J = 7.6 Hz, 1 H, Ar*H*), 7.53 (t, J = 7.6 Hz, 1 H, Ar*H*), 7.47 (d, J = 7.6 Hz, Ar*H*, 2H), 7.43 (t, J = 7.6 Hz, 1 H, Ar*H*), 7.33 (d, J = 7.6 Hz, 1 H, Ar*H*), 7.22 (t, J = 7.6 Hz, 1 H, Ar*H*), 7.15 (d, J = 7.6 Hz, 1 H, Ar*H*), 4.19 (q, J = 7.3 Hz, 2 H, CH_3–CH_2), 1.06 (t, J = 7.3 Hz, 3 H, CH_3–CH_2) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 191.1 (CO), 161.5 (CO), 137.6 (C), 136.3 (C), 135.1 (C), 134.4 (Ar*C*H), 133.8 (Ar*C*H), 131.5 (Ar*C*H), 130.5 (C), 129.9 (C), 129.3 (Ar*C*H), 129.2 (2 × Ar*C*H), 127.7 (Ar*C*H), 127.6 (Ar*C*H), 127.5 (2 × Ar*C*H), 125.0 (Ar*C*H), 124.3 (C), 121.2 (Ar*C*H), 115.5 (Ar*C*H), 62.5 (CH_3–CH_2), 13.7 (CH_3CH_2) ppm. FTIR: $\tilde{\nu}$ = 2751, 1728, 1697 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{24}H_{19}NNaO_5S]^+$: 456.0848; found 456.0861.

Ethyl 5-Fluoro-3-(2-formylphenyl)-1-phenylsulfonyl-1*H*-indole-2-carboxylate (12b): Yield 93.7 mg (83%). White foam. ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.67 (s, 1 H, C*H*O), 8.09 (dd, J = 8.8, 4.1 Hz, 1 H, Ar*H*), 8.05 (d, J = 7.5 Hz, 1 H, Ar*H*), 7.99 (d, J = 8.2 Hz, 2 H, Ar*H*), 7.63 (t, J = 8.2 Hz, 1 H, Ar*H*), 7.59 (t, J = 7.5 Hz, 1 H, Ar*H*), 7.56 (t, J = 7.5 Hz, 1 H, Ar*H*), 7.63 (t, J = 8.2 Hz, 2 H, Ar*H*), 7.33 (d, J = 7.5 Hz, 1 H, Ar*H*), 7.17 (td, J = 8.8, 2.4 Hz, 1 H, Ar*H*), 7.17 (dd, J = 8.2, 2.4 Hz, 1 H, Ar*H*), 4.21 (q, J = 7.3 Hz, 2 H, CH_3–CH_2), 1.09 (t, J = 7.3 Hz, 3 H, CH_3–CH_2) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 190.8 (CO), 161.2 (CO), 160.5 (d, J = 243.6 Hz, CF), 137.3 (C), 135.0 (C), 134.6 (Ar*C*H), 133.9 (Ar*C*H), 133.7 (C), 132.5 (C), 131.6 (C), 131.4 (Ar*C*H), 129.5 (Ar*C*H), 129.3 (2 × Ar*C*H), 128.0 (Ar*C*H), 127.5 (2 × Ar*C*H), 123.9 (d, J = 3.8 Hz, 1 C), 116.9 (d, J = 9.0 Hz, Ar*C*H), 115.8 (d, J = 25.5 Hz, Ar*C*H), 106.7 (d, J = 24.6 Hz, Ar*C*H), 62.7 (CH_3–CH_2), 13.7 (CH_3CH_2) ppm. FTIR: $\tilde{\nu}$ = 1726, 1696, 1372, 1188, 1175 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{24}H_{18}FNNaO_5S]^+$: 474.0788; found 474.0781.

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Ethyl 5-Benzyloxy-3-(2-formylphenyl)-1-phenylsulfonyl-1*H*-indole-2-carboxylate (12c): Yield 126.8 mg (92%). Beige foam. ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.63 (s, 1 H, C*H*O), 8.06 (d, *J* = 7.6 Hz, 1 H, Ar*H*), 8.04 (d, *J* = 9.1 Hz, 1 H, Ar*H*), 7.97 (d, *J* = 8.0 Hz, 2 H, Ar*H*), 7.63 (t, *J* = 7.6 Hz, 1 H, Ar*H*), 7.58 (t, *J* = 7.6 Hz, 1 H, Ar*H*), 7.56 (t, *J* = 7.5 Hz, 1 H, Ar*H*), 7.47 (d, *J* = 8.0 Hz, 2 H, Ar*H*), 7.26–7.34 (m, 5 H, Ar*H*), 7.13 (dd, *J* = 9.1, 2.2 Hz, 1 H, Ar*H*), 6.63 (d, *J* = 2.2 Hz, 1 H, Ar*H*), 4.90 (s, 2 H, CH_2Ph), 4.21 (q, *J* = 7.3 Hz, 2 H, CH_3–CH_2), 1.10 (t, *J* = 7.3 Hz, 3 H, CH_3–CH_2) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 191.2 (CO), 161.5 (CO), 156.9 (CO), 137.4 (C), 136.6 (C), 135.1 (C), 134.5 (C), 134.4 (Ar*C*H), 133.9 (Ar*C*H), 131.6 (C), 131.4 (Ar*C*H), 131.2 (C), 130.7 (C), 129.4 (Ar*C*H), 129.3 (2 × Ar*C*H), 128.8 (2 × Ar*C*H), 128.3 (Ar*C*H), 127.8 (2 × Ar*C*H), 127.7 (Ar*C*H), 127.5 (2 × Ar*C*H), 124.7 (C), 117.5 (Ar*C*H), 116.8 (Ar*C*H), 104.3 (Ar*C*H), 70.7 (CH_2Ph), 62.6 (CH_3–*C*H_2), 13.8 (*C*H_3CH$_2$) ppm. FTIR: $\tilde{\nu}$ = 1724, 1695, 1371, 1176 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{31}H_{25}NNaO_6S]^+$: 562.1301; found 562.1283.

General Procedure for Saponification and Deprotection of Indoles 4a–4c: Aqueous LiOH (1 M, 7.0 mmol, 7 mL, 5 equiv.) was added to a solution of oxo ester **12** (1.40 mmol) in THF (9.5 mL), and the solution was stirred at 60 °C overnight. The mixture was cooled to 0 °C, aqueous HCl (1 M) was added until pH = 2–3, and the resulting mixture was extracted with EtOAc (3 × 20 mL). The combined organic extracts were dried ($MgSO_4$) and filtered, and the solvents were evaporated. The resulting solid was directly used without further purification.

3-(2-Formylphenyl)-1*H*-indole-2-carboxylic Acid (4a): Yield 356.5 mg (96%). White foam. ^{1}H NMR (MeOD, 500 MHz, 25 °C): δ = 9.80 (s, 1 H, C*H*O), 8.00 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.66 (t, *J* = 7.3 Hz, 1 H, Ar*H*), 7.47–7.53 (m, 3 H, Ar*H*), 7.29–7.32 (m, 2 H, Ar*H*), 7.07 (t, *J* = 7.3 Hz, 1 H, Ar*H*) ppm. ^{13}C NMR (MeOD, 75.5 MHz, 25 °C): δ = 193.4 (CO), 163.5 (CO), 138.4 (C), 136.2 (C), 134.9 (C), 133.7 (Ar*C*H), 132.5 (Ar*C*H), 128.9 (C), 127.9 (Ar*C*H), 126.9 (Ar*C*H), 126.1 (Ar*C*H), 125.6 (C), 121.4 (Ar*C*H), 121.2 (Ar*C*H), 118.7 (C), 112.5 (Ar*C*H) ppm. FTIR: $\tilde{\nu}$ = 3180, 2950, 1681, 1659, 1543, 745 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{16}H_{11}NNaO_3]^+$: 288.0637; found 288.0641.

5-Fluoro-3-(2-formylphenyl)-1*H*-indole-2-carboxylic Acid (4b): Yield 378.8 mg (93%). White foam. ^{1}H NMR (MeOD, 500 MHz, 25 °C): δ = 9.83 (s, 1 H, C*H*O), 8.02 (dd, *J* = 7.9, 1.3 Hz, 1 H, Ar*H*), 7.72 (td, *J* = 7.6, 1.3 Hz, 1 H, Ar*H*), 7.49–7.57 (m, 3 H, Ar*H*), 7.13 (td, *J* = 9.5, 2.4 Hz, 1 H, Ar*H*), 6.96 (dd, *J* = 9.5, 2.4 Hz, 1 H, Ar*H*) ppm. ^{13}C NMR (MeOD, 75.5 MHz, 25 °C): δ = 193.0 (CO), 163.8 (CO), 154.5 (d, *J* = 238.8 Hz, CF), 135.2 (C), 134.3 (Ar*C*H), 133.6 (C), 132.4 (C), 131.7 (C), 131.4 (Ar*C*H), 129.7 (Ar*C*H), 129.6 (C), 128.7 (C), 128.2 (Ar*C*H), 117.3 (d, *J* = 9.4 Hz, Ar*C*H), 114.9 (d, *J* = 26.3 Hz, Ar*C*H), 106.8 (d, *J* = 24.8 Hz, Ar*C*H) ppm. FTIR: $\tilde{\nu}$ = 3182, 2945, 1678, 1650, 1548, 746 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{16}H_{10}FNNaO_3]^+$: 306.0543; found 306.0554.

5-Benzyloxy-3-(2-formylphenyl)-1*H*-indole-2-carboxylic Acid (4c): Yield 452.4 mg (87%). White foam. ^{1}H NMR (MeOD, 500 MHz, 25 °C): δ = 9.82 (s, 1 H, C*H*O), 8.00 (dd, *J* = 7.6, 1.1 Hz, 1 H, Ar*H*), 7.66 (td, *J* = 7.6, 1.1 Hz, 1 H, Ar*H*), 7.52 (t, *J* = 7.6 Hz, 1 H, Ar*H*), 7.44–7.45 (m, 2 H, Ar*H*), 7.25–7.38 (m, 4 H, Ar*H*), 7.08 (dd, *J* = 8.9, 2.1 Hz, 1 H, Ar*H*), 6.80, (d, *J* = 2.1 Hz, 1 H, Ar*H*), 4.96 (s, 2 H, CH_2Ph) ppm. ^{13}C NMR (MeOD, 75.5 MHz, 25 °C): δ = 194.0 (CO), 164.6 (CO), 155.6 (C), 140.0 (C), 138.9 (C), 136.3 (C), 137.4 (Ar*C*H), 133.5 (Ar*C*H), 133.2 (C), 130.1 (C), 129.5 (2 × Ar*C*H), 128.9 (Ar*C*H), 128.8 (2 × Ar*C*H, Ar*C*H), 127.7 (Ar*C*H), 119.0 (Ar*C*H), 118.8 (C), 114.6 (Ar*C*H), 103.4 (Ar*C*H), 71.7 (*C*H_2Ph) ppm. FTIR: $\tilde{\nu}$ = 3192, 2954, 1687, 1665, 1547 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{23}H_{17}NNaO_4]^+$: 394.1056; found 394.1047.

General Procedure for Ugi 4-CRs. Syntheses of Compounds 5a–5s: The oxo acid **4** (0.134 mmol, 1 equiv.) and the corresponding primary amine **13** (0.134 mmol, 1 equiv.) were dissolved in methanol (0.85 mL), and the solution was stirred at room temperature for 10 min. Isocyanide (0.134 mmol, 1 equiv.) was then added, and the resulting mixture was heated at 50 °C overnight. Aqueous HCl solution (0.1 M, 1 mL) was added, and the mixture was stirred for 15 min at room temperature. Water (10 mL) was added, the mixture was extracted with CH_2Cl_2 (3 × 10 mL), the combined organic extracts were dried ($MgSO_4$) and filtered, and the solvents were evaporated. The resulting brown oil was purified by flash chromatography on silica gel (CH_2Cl_2/MeOH, 95:5) to give compounds **5a**–**5s**.

6-Benzyl-*N*-cyclohexyl-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5a): Yield 31.7 mg (51%). White solid; m.p. 212 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.93 (br. s, 1 H, N*H*), 8.03 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.95 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.50 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.46 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.27–7.34 (m, 6 H, Ar*H*), 7.21 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.18 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 6.85 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 5.46 (d, *J* = 14.9 Hz, 1 H, C*H*Ph AB system), 4.83–4.87 (m, 2 H, C*H*, N*H*), 4.69 (d, *J* = 14.9 Hz, 1 H, C*H*Ph AB system), 3.21–3.29 (m, 1 H, C*H*Cy), 1.23–1.42 (m, 4 H, CH_2Cy), 0.98–1.07 (m, 2 H, CH_2Cy), 0.76–0.87 (m, 2 H, CH_2Cy), 0.62–0.70 (m, 2 H, CH_2Cy) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 168.0 (CO), 163.4 (CO), 136.8 (C), 136.5 (C), 134.6 (C), 132.9 (C), 130.6 (Ar*C*H), 130.0 (C), 129.6 (Ar*C*H), 129.3 (Ar*C*H), 128.8 (Ar*C*H), 128.5 (Ar*C*H), 128.0 (Ar*C*H), 127.1 (Ar*C*H), 125.2 (Ar*C*H), 125.0 (C), 121.2 (Ar*C*H), 121.1 (Ar*C*H), 116.5 (C), 112.7 (Ar*C*H), 66.2 (*C*H), 52.7 (*C*H_2Ph), 48.2 (*C*HCy), 32.4 (*C*H_2), 32.1 (*C*H_2), 25.3 (*C*H_2), 24.6 (*C*H_2), 24.3 (*C*H_2) ppm. FTIR: $\tilde{\nu}$ = 3306, 2929, 2437, 1660, 1517 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{30}H_{29}N_3NaO_2]^+$: 486.2116; found 486.2157.

***N*-Butyl-6-(4-methoxybenzyl)-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5b):** Yield 35.1 mg (56%). White solid; m.p. 184 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.15 (br. s, 1 H, N*H*), 7.93 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.88 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.41 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.37 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.24 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.10–7.16 (m, 4 H, Ar*H*), 6.74 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 5.27 (d, *J* = 14.8 Hz, 1 H, CH_2Ph AB system), 4.90 (br. s, 1 H, N*H*), 4.75 (s, 1 H, C*H*), 4.47 (d, *J* = 14.8 Hz, 1 H, CH_2Ph AB system), 3.71 (s, 3 H, OCH_3), 2.83–2.92 (m, 1 H, CH_2N), 2.37–2.44 (m, 1 H, CH_2N), 0.46–0.54 (m, 4 H, 2 × CH_2), 0.25 (t, *J* = 6.8 Hz, 3 H, CH_3) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 167.0 (CO), 163.2 (CO), 159.5 (CO), 136.4 (C), 134.6 (C), 133.0 (C), 130.8 (C), 130.7 (Ar*C*H), 130.4 (C), 129.7 (Ar*C*H), 128.8 (C), 128.5 (Ar*C*H), 127.2 (Ar*C*H), 125.4 (Ar*C*H), 125.2 (C), 121.5 (Ar*C*H), 121.4 (Ar*C*H), 116.2 (C), 114.2 (Ar*C*H), 112.6 (Ar*C*H), 65.8 (CH), 55.5 (O*C*H_3), 52.0 (*C*H_2Ph), 39.6 (*C*H_2), 31.5 (*C*H_2), 19.6 (*C*H_2), 13.5 (*C*H_3) ppm. FTIR: $\tilde{\nu}$ = 3267, 1655, 1609, 1510 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{29}H_{29}N_3O_3Na]^+$: 490.2114; found 490.2107. $C_{29}H_{29}N_3O_3$ (467.56): calcd. C 74.50, H 6.25, N 8.99; found C 74.19, H 6.55, N 8.94.

6-Methyl-*N*-(2-morpholinoethyl)-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5c): Yield 18.5 mg (33%). White solid; m.p. 237 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.80 (br. s, 1 H, N*H*), 8.06 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.91 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.58 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.46–7.48 (m, 2 H, Ar*H*), 7.40 (t, *J* = 7.3 Hz, 1 H, Ar*H*), 7.31 (t, *J* = 7.7 Hz, 1

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H, Ar*H*), 7.17 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 5.89 (br. s, 1 H, N*H*), 4.85 (s, 1 H, C*H*), 3.40 (s, 3 H, NCH_3), 3.38 (br. s, 4 H, 2×CH_2O), 2.69–2.83 (m, 2 H, CH_2NH), 1.98–2.04 (m, 2 H, CH_2N), 1.85–1.91 (m, 2 H, CH_2N), 1.75–1.79 (m, 1 H, C*H*N), 1.62 (s, 9 H, *t*Bu), 1.49–1.53 (m, 1 H, C*H*N) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): *δ* = 168.9 (CO), 163.1 (CO), 136.4 (C), 134.5 (C), 133.0 (C), 130.9 (Ar*C*H), 130.7 (C), 129.9 (Ar*C*H), 128.6 (Ar*C*H), 127.3 (Ar*C*H), 125.2 (Ar*C*H), 124.9, (C), 121.3 (Ar*C*H), 120.8 (Ar*C*H), 112.9 (Ar*C*H), 69.8 (*C*H), 67.0 (2×*C*H_2O), 56.0 (*C*H_2N), 52.9 (2×*C*H_2N), 38.1 (*C*H_3), 35.8 (*C*H_2NH) ppm. FTIR: ṽ = 3244, 2826, 1672, 1613, 1504 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{24}H_{26}N_4NaO_3$]$^+$: 441.1903; found 441.1896. $C_{24}H_{26}N_4O_3$·0.6H_2O (429.30): calcd. C 67.15, H 6.39, N 13.05; found C 66.84, H 6.59, N 13.36.

6-Isopropyl-*N*-(2-morpholinoethyl)-7-oxo-5,6,7,8-tetrahydroindolo-[2,3-*d*][2]benzazepine-5-carboxamide (5d): Yield 28.7 mg (48%). White solid; m.p. 262 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): *δ* = 9.78 (br. s, 1 H, N*H*), 8.04 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.90 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.54 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.46 (d, *J* = 8.1 Hz, 2 H, Ar*H*), 7.36 (t, *J* = 7.3 Hz, 1 H, Ar*H*), 7.31 (t, *J* = 7.3 Hz, 1 H, Ar*H*), 7.16 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 5.92 (br. s, 1 H, N*H*), 5.10 (sept, *J* = 6.7 Hz, 1 H, C*H*), 4.98 (s, 1 H, C*H*), 3.38 (br. s, 4 H, 2×CH_2O), 2.73–2.84 (m, 2 H, CH_2NH), 2.02–2.06 (m, 2 H, CH_2N), 1.93–1.97 (m, 2 H, CH_2N), 1.83–1.87 (m, 1 H, C*H*N), 1.61–1.66 (m, 1 H, C*H*N), 1.38 (d, *J* = 6.7 Hz, 3 H, CH_3), 1.22 (d, *J* = 6.7 Hz, 3 H, CH_3) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): *δ* = 169.2 (CO), 162.4 (CO), 136.4 (C), 136.0 (C), 133.2 (C), 131.3 (C), 130.3 (Ar*C*H), 129.5 (Ar*C*H), 128.4 (Ar*C*H), 127.2 (Ar*C*H), 125.0 (Ar*C*H), 124.9, (C), 121.2 (Ar*C*H), 120.8 (Ar*C*H), 115.3 (C), 112.8 (Ar*C*H), 67.0 (2×*C*H_2O), 60.1 (*C*H), 56.0 (*C*H_2N), 52.9 (2×*C*H_2N), 46.5 (*C*H), 35.9 (*C*H_2NH), 21.7 (*C*H_3), 20.1 (*C*H_3) ppm. FTIR: ṽ = 3236, 2956, 1665, 1601, 1524 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{26}H_{30}N_4NaO_3$]$^+$: 447.2396; found 447.2379. $C_{26}H_{30}N_4O_3$·0.1H_2O (448.34): calcd. C 69.65, H 6.79, N 12.50; found C 69.28, H 6.98, N 12.58.

6-Allyl-*N*-(2-morpholin-4-ylethyl)-7-oxo-5,6,7,8-tetrahydroindolo-[2,3-*d*][2]benzazepine-5-carboxamide (5e): Yield 23.8 mg (40%). White solid; m.p. 262 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): *δ* = 10.0 (br. s, 1 H, N*H*), 8.04 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.90 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.56 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.47 (d, *J* = 8.2 Hz, 1 H, Ar*H*), 7.35–7.40 (m, 2 H, Ar*H*), 7.31 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.17 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 5.87–5.95 (m, 2 H, N*H* and C*H*), 5.32 (dd, *J* = 17.1, 1.2 Hz, 1 H, C*H*), 5.27 (dd, *J* = 10.1, 1.2 Hz, 1 H, C*H*), 4.94 (s, 1 H, C*H*), 4.70 (dd, *J* = 15.3, 5.8 Hz, 1 H, C*H*), 4.22 (dd, *J* = 15.3, 7.1 Hz, 1 H, C*H*), 3.38 (br. s, 4 H, 2×CH_2O), 2.75–2.86 (m, 2 H, CH_2NH), 2.02–2.05 (m, 2 H, CH_2N), 1.92–1.96 (m, 2 H, CH_2N), 1.84–1.88 (m, 1 H, C*H*N), 1.63–1.68 (m, 1 H, C*H*N) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): *δ* = 168.8 (CO), 162.8 (CO), 136.6 (C), 134.8 (C), 133.9 (*C*H), 133.1 (C), 130.8 (Ar*C*H), 130.6 (C), 129.7 (Ar*C*H), 128.5 (Ar*C*H), 127.2 (Ar*C*H), 125.2 (Ar*C*H), 124.9, (C), 121.2 (Ar*C*H), 120.8 (Ar*C*H), 119.3 (*C*H_2), 115.8 (C), 112.9 (Ar*C*H), 67.0 (2×*C*H_2O), 65.9 (*C*H), 56.0 (*C*H_2N), 52.9 (2×*C*H_2N), 51.8 (*C*H_2), 35.8 (*C*H_2NH) ppm. FTIR: ṽ = 3257, 2956, 1652, 1611, 1531, 1115 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{26}H_{28}N_4O_3Na$]$^+$: 445.2240; found 445.2236. $C_{26}H_{28}N_4O_3$ (444.53): calcd. C 70.25, H 6.35, N 12.60; found C 69.94, H 6.58, N 12.29.

***N*-(2-Morpholinoethyl)-7-oxo-6-pentyl-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5f):** Yield 34.3 mg (54%). White solid; m.p. 219 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): *δ* = 9.62 (br. s, 1 H, N*H*), 8.04 (d, *J* = 7.6 Hz, 1 H, Ar*H*), 7.90 (d, *J* = 7.6 Hz, 1 H, Ar*H*), 7.57 (td, *J* = 7.6, 1.2 Hz, 1 H, Ar*H*), 7.45–7.47 (m, 2 H, Ar*H*), 7.39 (td, *J* = 7.6, 0.9 Hz, 1 H, Ar*H*), 7.31 (t, *J* = 7.6 Hz, 1 H, Ar*H*), 7.17 (t, *J* = 7.6 Hz, 1 H, Ar*H*), 5.88 (br. t, *J* = 4.8 Hz, 1 H, N*H*), 4.89 (s, 1 H, C*H*), 3.94–4.00 (m, 1 H, NCH_{pent} AB system), 3.55–3.60 (m, 1 H, NCH_{pent} AB system), 3.35–3.43 (br. s, 4 H, 2×CH_2O), 2.76–2.87 (m, 2 H, CH_2NH), 2.01–2.09 (m, 2 H, CH_2N), 1.92–1.97 (m, 2 H, CH_2N), 1.84–1.89 (m, 1 H, C*H*CH_{2pent} AB system), 1.73–1.82 (m, 1 H, C*H*N), 1.60–1.66 (m, 2 H, CH_2CH_{2pent}), 1.21–1.35 (m, 4 H, CH_2CH_{3pent}, C*H*N, C*H*CH_{2pent} AB system), 0.84 (t, *J* = 8.2 Hz, 3 H, CH_3) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): *δ* = 168.8 (CO), 162.5 (CO), 136.4 (C), 135.2 (C), 133.0 (C), 131.0 (C), 130.6 (Ar*C*H), 129.8 (Ar*C*H), 128.5 (Ar*C*H), 127.2 (Ar*C*H), 125.1 (Ar*C*H), 124.9 (C), 121.2 (Ar*C*H), 120.8 (Ar*C*H), 115.6 (C), 112.8 (Ar*C*H), 67.9 (*C*H), 67.0 (2×*C*H_2O), 56.0 (*C*H_2N), 52.9 (2×*C*H_2N), 50.1 (*C*H_2), 35.8 (*C*H_2NH), 29.2 (*C*H_2), 28.2 (*C*H_2), 22.6 (*C*H_2), 14.2 (*C*H_3) ppm. FTIR: ṽ = 3333, 2961, 1665, 1621, 1496, 1115 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{28}H_{34}N_4NaO_3$]$^+$: 475.2709; found 475.2695. $C_{28}H_{34}N_4O_3$·0.2H_2O (478.20): calcd. C 70.33, H 7.25, N 11.72; found C 70.16, H 7.38, N 11.34.

***N*-Butyl-6-(*tert*-butyl)-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5g):** Yield 29.7 mg (55%). White solid; m.p. 205 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): *δ* = 9.16 (br. s, 1 H, N*H*), 8.09 (d, *J* = 7.6 Hz, 1 H, Ar*H*), 7.97 (d, *J* = 7.6 Hz, 1 H, Ar*H*), 7.57 (t, *J* = 7.6 Hz, 1 H, Ar*H*), 7.47 (d, *J* = 7.6 Hz, 1 H, Ar*H*), 7.42 (d, *J* = 7.6 Hz, 1 H, Ar*H*), 7.38 (t, *J* = 7.6 Hz, 1 H, Ar*H*), 7.30 (t, *J* = 7.6 Hz, 1 H, Ar*H*), 7.18 (t, *J* = 7.6 Hz, 1 H, Ar*H*), 5.32 (s, 1 H, C*H*), 5.03 (br. s, 1 H, N*H*), 2.97–3.04 (m, 2 H, CH_2), 2.40–2.47 (m, 2 H, CH_2), 1.62 (s, 9 H, *t*Bu), 0.52–0.59 (m, 2 H, CH_2), 0.39–0.48 (m, 2 H, CH_2), 0.30 (t, *J* = 7.3 Hz, 3 H, CH_3) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): *δ* = 167.0 (CO), 163.5 (CO), 136.5 (C), 136.0 (C), 133.1 (C), 132.2 (C), 130.1 (Ar*C*H), 129.6 (Ar*C*H), 128.4 (Ar*C*H), 127.2 (Ar*C*H), 125.2 (C), 125.1 (Ar*C*H), 121.3 (Ar*C*H), 121.2 (Ar*C*H), 115.1 (C), 112.4 (Ar*C*H), 63.4 (*C*H), 59.7 (C), 39.8 (*C*H_2), 31.4 (*C*H_2), 29.2 (*t*Bu), 19.7 (*C*H_2), 13.4 (*C*H_3) ppm. FTIR: ṽ = 3290, 2958, 2927, 1660, 1609, 1529 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{25}H_{29}N_3NaO_2$]$^+$: 426.2158; found 426.2157.

6-*tert*-Butyl-*N*-(2-morpholinoethyl)-7-oxo-5,6,7,8-tetrahydroindolo-[2,3-*d*][2]benzazepine-5-carboxamide (5h): Yield 34.6 mg (56%). White solid; m.p. 235 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): *δ* = 9.28 (br. s, 1 H, N*H*), 8.09 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.92 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.57 (t, *J* = 7.5 Hz, 1 H, Ar*H*), 7.43 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.39 (t, *J* = 7.5 Hz, 1 H, Ar*H*), 7.30 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.16 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 5.77 (br. s, 1 H, N*H*), 5.34 (s, 1 H, C*H*), 3.38 (br. s, 4 H, 2×CH_2O), 2.69–2.83 (m, 2 H, CH_2NH), 1.98–2.04 (m, 2 H, CH_2N), 1.85–1.91 (m, 2 H, CH_2N), 1.75–1.79 (m, 1 H, C*H*N), 1.62 (s, 9 H, *t*Bu), 1.49–1.53 (m, 1 H, C*H*N) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): *δ* = 170.0 (CO), 163.6 (CO), 136.8 (C), 136.0 (C), 133.1 (C), 132.5 (C), 130.1 (Ar*C*H), 129.5 (C), 128.2 (Ar*C*H), 127.2 (Ar*C*H), 125.1 (Ar*C*H), 125.0 (C), 121.2 (Ar*C*H), 121.0 (Ar*C*H), 114.9 (Ar*C*H), 112.6 (Ar*C*H), 67.0 (2×*C*H_2O), 63.3 (*C*H), 59.7 (C), 56.0 (*C*H_2N), 52.9 (2×*C*H_2N), 35.9 (*C*H_2NH), 29.2 (*t*Bu) ppm. FTIR: ṽ = 3274, 1666, 1610, 1530 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{27}H_{32}N_4NaO_3$]$^+$: 461.2569; found 461.2553.

Methyl *N*-[(6-*tert*-Butyl-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepin-5-yl)carbonyl]glycinate (5i): Yield 20.8 mg (37%). White amorphous solid. ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): *δ* = 9.45 (br. s, 1 H, N*H*), 8.09 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 8.00 (d, *J* = 8.0 Hz, 1 H, Ar*H*), 7.55 (td, *J* = 7.5, 1.3 Hz, 1 H, Ar*H*), 7.43–7.47 (m, 2 H, Ar*H*), 7.35 (td, *J* = 7.5, 1.3 Hz, 1 H, Ar*H*), 7.30 (td, *J* = 8.1, 1.3 Hz, 1 H, Ar*H*), 7.18 (td, *J* = 8.1, 1.3 Hz, 1 H, Ar*H*), 5.64

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(br. s, 1 H, NH), 5.40 (s, 1 H, CH), 3.62 (dd, J = 18.3, 5.5 Hz, 1 H, CH), 3.37 (dd, J = 18.3, 5.5 Hz, 1 H, CH), 3.33 (s, 3 H, CH_3), 1.63 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 170.4 (CO), 169.9 (CO), 163.5 (CO), 136.2 (C), 135.8 (C), 133.2 (C), 132.1 (C), 130.1 (ArCH), 129.7 (ArCH), 128.4 (ArCH), 127.3 (ArCH), 125.1 (ArCH), 121.6 (ArCH), 121.1 (ArCH), 115.2 (C), 112.5 (ArCH), 63.3 (CH), 59.9 (C), 52.2 (OCH_3), 41.7 (CH_2), 29.2 (*t*Bu) ppm. FTIR: $\tilde{\nu}$ = 3273, 1732, 1680, 1614 cm^{-1}. HRMS (ESI^+) calcd. for $[C_{24}H_{25}N_3O_4Na]^+$: 442.1743; found 442.1743.

***N*-Benzyl-6-*tert*-butyl-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5j):** Yield 33.4 mg (57%). White solid; m.p. 240 °C (Et_2O). ^1H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.20 (br. s, 1 H, NH), 8.09 (d, J = 8.0 Hz, 1 H, ArH), 7.96 (d, J = 8.0 Hz, 1 H, ArH), 7.53 (t, J = 7.6 Hz, 1 H, ArH), 7.45–7.48 (m, 2 H, ArH), 7.38 (t, J = 7.6 Hz, 1 H, ArH), 7.35 (t, J = 7.6 Hz, 1 H, ArH), 7.23 (t, J = 7.6 Hz, 1 H, ArH), 6.91 (t, J = 7.1 Hz, 1 H, ArH), 6.67 (t, J = 7.6 Hz, 2 H, ArH), 6.32 (d, J = 7.6 Hz, 2 H, ArH) 5.42 (s, 1 H, CH), 5.38 (s, 1 H, NH), 4.45 (dd, J = 15.1 Hz, 1 H, CHBn AB system), 3.68 (dd, J = 15.1 Hz, 1 H, CHBn AB system) 1.63 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 170.1 (CO), 163.5 (CO), 137.4 (C), 136.1 (C), 135.9 (C), 133.1 (C), 132.2 (C), 130.2 (ArCH), 129.7 (ArCH), 128.5 (ArCH), 128.4 (ArCH), 127.2 (ArCH), 127.1 (ArCH), 126.9 (ArCH), 125.4 (C), 125.3 (ArCH), 121.7 (ArCH), 121.5 (ArCH) 115.0 (C), 112.6 (ArCH), 63.5 (CH), 59.8 (C), 43.9 (CH_2), 29.2 (*t*Bu) ppm. FTIR: $\tilde{\nu}$ = 3290, 1697, 1611, 1494, 1191 cm^{-1}. HRMS (ESI^+) calcd. for $[C_{25}H_{29}N_3NaO_2]^+$: 460.2001; found 460.1967.

6-*tert*-Butyl-*N*-methyl-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5k): Yield 19.9 mg (41%). White solid; m.p. 302 °C (Et_2O). ^1H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.37 (br. s, 1 H, NH), 8.09 (d, J = 7.7 Hz, 1 H, ArH), 7.99 (d, J = 8.1 Hz, 1 H, ArH), 7.56 (t, J = 7.7 Hz, 1 H, ArH), 7.46 (d, J = 7.7 Hz, 1 H, ArH), 7.44 (d, J = 8.1 Hz, 1 H, ArH), 7.38 (t, J = 7.7 Hz, 1 H, ArH), 7.31 (t, J = 7.7 Hz, 1 H, ArH), 7.18 (t, J = 7.7 Hz, 1 H, ArH), 5.35 (s, 1 H, CH), 5.04 (d, J = 4.8 Hz, 1 H, NH), 2.25 (d, J = 4.8 Hz, 3 H, CH_3), 1.62 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 170.6 (CO), 163.6 (CO), 136.3 (C), 136.1 (C), 133.2 (C), 132.2 (C), 130.1 (ArCH), 129.5 (ArCH), 128.4 (ArCH), 127.2 (ArCH), 125.0 (ArCH), 121.3 (ArCH), 121.1 (ArCH), 112.6 (ArCH), 63.3 (CH), 59.8 (C), 29.2 (*t*Bu), 26.8 (CH_3) ppm. FTIR: $\tilde{\nu}$ = 3260, 2961, 1668, 1635, 1615, 1520 cm^{-1}. HRMS (ESI^+) calcd. for $[C_{22}H_{23}N_3O_2Na]^+$: 384.1688; found 384.1690. $C_{22}H_{23}N_3O_2 \cdot 0.3\,H_2O$ (366.84): calcd. C 72.03, H 6.48, N 11.45; found C 71.66, H 6.58, N 11.17.

***N*,6-Di-*tert*-butyl-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5l):** Yield 34.1 mg (63%). White solid; m.p. 212 °C (Et_2O). ^1H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.39 (br. s, 1 H, NH), 8.06 (d, J = 7.7 Hz, 1 H, ArH), 7.97 (d, J = 8.0 Hz, 1 H, ArH), 7.55 (td, J = 7.5, 1.3 Hz, 1 H, ArH), 7.42–7.46 (m, 2 H, ArH), 7.37 (td, J = 7.5, 1.3 Hz, 1 H, ArH), 7.29 (td, J = 8.1, 1.3 Hz, 1 H, ArH), 7.19 (td, J = 8.1, 1.3 Hz, 1 H, ArH), 5.26 (s, 1 H, CH), 4.79 (s, 1 H, NH), 1.62 (s, 9 H, *t*Bu), 0.59 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 168.9 (CO), 163.6 (CO), 137.1 (C), 136.1 (C), 132.9 (C), 132.3 (C), 129.9 (ArCH), 129.5 (ArCH), 128.4 (ArCH), 127.2 (ArCH), 125.3 (C), 125.1 (ArCH), 121.3 (C), 120.9 (ArCH), 115.4 (C), 112.4 (C), 63.7 (CH), 59.7 (C), 51.3 (C), 29.2 (*t*Bu), 27.9 (*t*Bu) ppm. FTIR: $\tilde{\nu}$ = 3263, 1679, 1614, 1498, 1194 cm^{-1}. HRMS (ESI^+) calcd. for $[C_{25}H_{29}N_3NaO_2]^+$: 426.2158; found 426.2157.

6-*tert*-Butyl-*N*-(cyclohex-1-enyl)-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5m): Yield 18.3 mg (32%). White solid; m.p. 260 °C (Et_2O). ^1H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.24 (br. s, 1 H, NH), 8.09 (d, J = 7.7 Hz, 1 H, ArH), 7.98 (d, J = 8.1 Hz, 1 H, ArH), 7.57 (t, J = 7.7 Hz, 1 H, ArH), 7.48 (d, J = 7.7 Hz, 1 H, ArH), 7.43 (d, J = 8.1 Hz, 1 H, ArH), 7.38 (t, J = 7.7 Hz, 1 H, ArH), 7.31 (t, J = 7.7 Hz, 1 H, ArH), 7.19 (t, J = 7.7 Hz, 1 H, ArH), 5.87 (s, 1 H, NH), 5.38 (s, 1 H, CH), 5.23 (br. t, 1 H, CH), 1.72–1.77 (m, 2 H, CH_2), 1.62 (s, 9 H, *t*Bu), 1.22–1.28 (m, 6 H, 3 × CH_2) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 168.4 (CO), 163.5 (CO), 140.9 (C), 136.3 (C), 136.1 (C), 133.1 (C), 132.3 (C), 132.2 (C), 130.0 (ArCH), 129.7 (ArCH), 128.5 (ArCH), 127.3 (ArCH), 125.1 (ArCH), 121.2 (ArCH), 121.1 (ArCH), 116.8 (ArCH), 115.1 (C), 112.5 (CH), 63.6 (CH), 59.8 (C), 29.2 (*t*Bu), 27.3 (CH_2), 24.0 (CH_2), 22.3 (CH_2), 21.6 (CH_2) ppm. FTIR: $\tilde{\nu}$ = 3293, 2921, 1665, 1603, 1515, 1191 cm^{-1}. HRMS (ESI^+) calcd. for $[C_{27}H_{29}N_3O_2Na]^+$: 450.2158; found 450.2157. $C_{27}H_{29}N_3O_2 \cdot 0.4\,H_2O$ (434.74): calcd. C 74.59, H 6.91, N 9.67; found C 74.38, H 7.07, N 9.49.

6-*tert*-Butyl-11-fluoro-*N*-(2-morpholinoethyl)-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5n): Yield 25.0 mg (39%). White solid; m.p. 279 °C (Et_2O). ^1H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.35 (br. s, 1 H, NH), 7.99 (d, J = 7.6 Hz, 1 H, ArH), 7.58 (td, J = 7.6, 1.0 Hz, 1 H, ArH), 7.55 (dd, J = 9.8, 2.3 Hz, 1 H, ArH), 7.48 (d, J = 7.3 Hz, 1 H, ArH), 7.40 (t, J = 7.6 Hz, 1 H, ArH), 7.37 (dd, J = 8.8, 4.4 Hz, 1 H, ArH), 7.07 (td, J = 8.8, 2.3 Hz, 1 H, ArH), 5.76 (br. s, 1 H, NH), 5.34 (s, 1 H, CH), 3.39 (br. s, 4 H, 2 × CH_2O), 2.71–2.84 (m, 2 H, CH_2NH), 2.01–2.06 (m, 2 H, CH_2N), 1.88–1.92 (m, 2 H, CH_2N), 1.78–1.83 (m, 1 H, CHN), 1.62 (s, 9 H, *t*Bu), 1.54–1.59 (m, 1 H, CHN) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 169.8 (CO), 163.3 (CO), 158.5 (d, J = 236.0 Hz, CF), 136.7 (C), 134.0 (C), 132.8 (C), 132.5 (C), 130.2 (ArCH), 129.7 (ArCH), 127.8 (ArCH), 127.3 (ArCH), 125.2 (C), 125.1 (C), 114.9 (C), 113.6 (d, J = 26.4 Hz, ArCH), 113.4 (d, J = 9.2 Hz, ArCH), 105.5 (d, J = 24.1 Hz, ArCH), 67.0 (2 × CH_2O), 63.3 (CH), 59.8 (C), 56.1 (CH_2N), 53.0 (2 × CH_2N), 35.9 (CH_2NH), 29.2 (*t*Bu) ppm. FTIR: $\tilde{\nu}$ = 3280, 1659, 1607, 1535 cm^{-1}. HRMS (ESI^+) calcd. for $[C_{27}H_{31}FN_4NaO_3]^+$: 479.2458; found 479.2474.

Methyl *N*-[(6-*tert*-Butyl-11-fluoro-7-oxo-5,6,7,8-tetrahydroindolo-[2,3-*d*][2]benzazepin-5-yl)carbonyl]glycinate (5o): Yield 22.3 mg (38%). White solid; m.p. 203 °C (Et_2O). ^1H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.19 (br. s, 1 H, NH), 8.01 (d, J = 7.6 Hz, 1 H, ArH), 7.64 (dd, J = 9.8, 2.2 Hz, 1 H, ArH), 7.58 (td, J = 7.6, 0.9 Hz, 1 H, ArH), 7.40 (td, J = 7.6, 0.9 Hz, 1 H, ArH), 7.35 (dd, J = 8.8, 4.4 Hz, 1 H, ArH), 7.07 (td, J = 8.8, 2.4 Hz, 1 H, ArH), 5.55 (br. s, 1 H, NH), 5.41 (s, 1 H, CH), 3.62 (dd, J = 18.3, 5.7 Hz, 1 H, CHNH), 3.39 (s, 3 H, OCH_3), 3.38 (dd, J = 18.3, 5.7 Hz, 1 H, CHNH), 1.61 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 170.3 (CO), 169.8 (CO), 163.2 (CO), 158.8 (d, J = 236.5 Hz, CF), 135.7 (C), 133.6 (C), 132.8 (C), 132.6 (C), 130.2 (ArCH), 129.9 (ArCH), 128.0 (ArCH), 127.5 (ArCH), 125.4 (C), 125.3 (C), 115.1 (C), 115.0 (C), 113.9 (d, J = 26.7 Hz, ArCH), 113.3 (d, J = 9.1 Hz, ArCH), 106.4 (d, J = 24.3 Hz, ArCH), 63.2 (CH), 60.0 (C), 52.3 (OCH_3), 41.6 (CH_2), 29.2 (*t*Bu) ppm. FTIR: $\tilde{\nu}$ = 3274, 1752, 1693, 1600, 1194 cm^{-1}. HRMS (ESI^+) calcd. for $[C_{24}H_{24}FN_3NaO_4]^+$: 460.1649; found 460.1622.

***N*-Benzyl-6-*tert*-butyl-11-fluoro-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5p):** Yield 31.7 mg (52%). White solid; m.p. 272 °C (Et_2O). ^1H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.24 (br. s, 1 H, NH), 7.97 (d, J = 7.9 Hz, 1 H, ArH), 7.51–7.56 (m, 2 H, ArH), 7.46 (d, J = 7.3 Hz, 1 H, ArH), 7.35–7.41 (m, 2 H, ArH), 7.13 (td, J = 8.8, 2.2 Hz, 1 H, ArH), 6.95 (t, J = 7.6 Hz, 1 H, ArH), 6.74 (t, J = 7.6 Hz, 2 H, ArH), 6.37 (d, J = 7.6 Hz, 2 H, ArH), 5.41 (s, 1 H, CH), 5.35 (br. s, 1 H, NH), 4.36 (dd, J = 14.9,

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7.8 Hz, 1 H, C*H*Ph AB system), 3.67 (dd, *J* = 14.9, 7.8 Hz, 1 H, C*H*Ph AB system), 1.63 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 169.7 (CO), 163.0 (CO), 159.7 (CF), 137.1 (C), 133.6 (C), 132.5 (C), 132.3 (C), 130.0 (Ar*C*H), 129.6 (Ar*C*H), 128.1 (2 × Ar*C*H), 127.8 (Ar*C*H), 127.2 (Ar*C*H), 127.1 (Ar*C*H), 126.8 (2 × Ar*C*H), 125.3 (C), 125.2 (C), 114.8 (C), 114.7 (C), 114.0 (d, *J* = 26.9 Hz, Ar*C*H), 113.5 (d, *J* = 9.6 Hz, Ar*C*H), 106.4 (d, *J* = 24.3 Hz, Ar*C*H), 106.2 (C), 106.2 (C), 63.2 (*C*H), 59.7 (C), 43.7 (*C*H_2), 29.0 (*t*Bu) ppm. FTIR: ṽ = 3269, 1674, 1612, 1501, 1149 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{28}H_{26}FN_3O_2Na]^+$: 478.1907; found 478.1889. $C_{28}H_{26}FN_3O_2$·0.04 $CHCl_3$ (460.30): calcd. C 73.17, H 5.70, N 9.13; found C 72.88, H 5.64, N 9.03.

***N*,6-Di-*tert*-butyl-11-fluoro-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]-benzazepine-5-carboxamide (5q):** Yield 29.4 mg (52%). White solid; m.p. 265 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.20 (br. s, 1 H, N*H*), 7.97 (d, *J* = 7.6 Hz, 1 H, Ar*H*), 7.62 (dd, *J* = 8.8, 2.4 Hz, 1 H, Ar*H*), 7.58 (td, *J* = 7.6, 1.2 Hz, 1 H, Ar*H*), 7.46 (dd, *J* = 7.6, 1.2 Hz, 1 H, Ar*H*), 7.36–7.38 (m, 2 H, Ar*H*), 7.07 (td, *J* = 8.8, 2.4 Hz, 1 H, Ar*H*), 5.25 (br. s, 1 H, C*H*), 4.76 (s, 1 H, N*H*), 1.61 (s, 9 H, *t*Bu), 0.62 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 168.8 (CO), 163.3 (CO), 158.9 (d, *J* = 236.2 Hz, CF), 137.0 (C), 134.0 (C), 132.6 (C), 132.5 (C), 130.0 (Ar*C*H), 129.6 (Ar*C*H), 127.9 (Ar*C*H), 127.4 (Ar*C*H), 125.5 (C), 125.4 (C), 115.3 (C), 115.2 (C), 113.9 (d, *J* = 26.7 Hz, Ar*C*H), 113.3 (d, *J* = 9.8 Hz, Ar*C*H), 105.6 (d, *J* = 24.1 Hz, Ar*C*H), 63.7 (*C*H), 59.8 (C), 51.4 (C), 29.1 (*t*Bu), 29.2 (*t*Bu) ppm. FTIR: ṽ = 3246, 1688, 1619, 1499 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{25}H_{28}FN_3NaO_2]^+$: 444.2064; found 444.2075.

11-Benzyloxy-6-*tert*-butyl-*N*-(2-morpholinoethyl)-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5r): Yield 42.5 mg (56%). White solid; m.p. 266 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.54 (br. s, 1 H, N*H*), 7.94 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.53 (td, *J* = 7.7, 1.4 Hz, 1 H, Ar*H*), 7.26–7.53 (m, 9 H, Ar*H*), 7.06 (dd, *J* = 8.9, 2.4 Hz, 1 H, CHar), 5.81 (br. t, 1 H, N*H*), 5.32 (s, 1 H, C*H*), 5.10 (d, *J* = 14.0 Hz, 1 H, C*H*Ph AB system), 5.06 (d, *J* = 14.0 Hz, 1 H, C*H*Ph AB system), 3.39 (br. t, 4 H, 2 × CH_2O), 2.68–2.91 (m, 2 H, CH_2NH), 2.02–2.09 (m, 2 H, CH_2N), 1.89–1.96 (m, 2 H, CH_2N), 1.75–1.83 (m, 1 H, C*H*N), 1.61 (s, 9 H, *t*Bu), 1.52–1.61 (m, 1 H, C*H*N) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 169.9 (CO), 163.5 (CO), 154.3 (CO), 137.1 (C), 136.6 (C), 133.2 (C), 133.1 (C), 131.6 (C), 130.1 (Ar*C*H), 129.4 (Ar*C*H), 128.8 (2 × Ar*C*H), 128.2 (Ar*C*H), 127.7 (2 × Ar*C*H), 126.9 (Ar*C*H), 125.3 (Ar*C*H), 115.8 (Ar*C*H), 114.7 (C), 113.4 (Ar*C*H), 104.8 (Ar*C*H), 71.3 (*C*H_2Ph), 67.0 (2 × *C*H_2O), 63.3 (*C*H), 59.7 (C), 56.2 (*C*H_2N), 53.0 (2 × *C*H_2N), 35.9 (*C*H_2NH), 29.2 (*t*Bu) ppm. FTIR: ṽ = 3261, 2964, 1692, 1612, 1500, 1193 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{34}H_{38}N_4NaO_4]^+$: 567.2971; found 567.2974. $C_{34}H_{38}N_4O_4$·0.1 $CHCl_3$ (578.63): calcd. C 70.58, H 6.64, N 9.68; found C 70.51, H 6.91, N 9.31.

11-Benzyloxy-*N*,6-di-*tert*-butyl-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (5s): Yield 53.3 mg (78%). White solid; m.p. 241 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.17 (br. s, 1 H, N*H*), 7.94 (d, *J* = 7.6 Hz, 1 H, Ar*H*), 7.63 (t, *J* = 7.6 Hz, 1 H, Ar*H*), 7.28–7.47 (m, 9 H, Ar*H*), 7.06 (dd, *J* = 8.9, 2.1 Hz, 1 H, Ar*H*), 5.24 (br. s, 1 H, C*H*), 5.19 (d, *J* = 12.2 Hz, 1 H, C*H*Ph AB system), 5.14 (d, *J* = 12.2 Hz, 1 H, C*H*Ph AB system), 4.79 (br. s, 1 H, N*H*), 1.61 (s, 9 H, *t*Bu), 0.61 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 169.0 (CO), 163.5 (CO), 154.3 (CO), 137.6 (C), 137.0 (C), 132.9 (C), 131.5 (C), 130.0 (Ar*C*H), 129.4 (Ar*C*H), 128.8 (2 × Ar*C*H), 128.1 (Ar*C*H), 127.9 (Ar*C*H), 127.8 (2 × Ar*C*H), 127.0 (Ar*C*H), 116.3 (Ar*C*H), 115.1 (C), 113.2 (Ar*C*H), 104.3 (Ar*C*H), 71.3 (*C*H_2), 63.7 (*C*H), 59.6 (C), 51.3 (C), 29.2 (*t*Bu), 28.0 (*t*Bu) ppm. FTIR: ṽ = 3261, 2964, 1692, 1612, 1500, 1193 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{32}H_{35}N_3NaO_3]^+$: 532.2576; found 532.2572. $C_{32}H_{35}N_3O_3$ (509.64): calcd. C 75.41, H 6.92; found C 75.22, H 6.85.

6-*tert*-Butyl-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (15): Acetyl chloride (42 μL, 0.585 mmol, 5 equiv.) was added to a solution of indolobenzazepinone **5m** (50 mg, 0.117 mmol, 1 equiv.) in distilled methanol (1.5 mL). The mixture was stirred at room temperature for 30 min. The methanol was then removed in vacuo, and the crude mixture was purified by flash chromatography on silica gel (CH_2Cl_2/MeOH, 97:3) to give the title compound (40.6 mg, 96%) as a white solid; m.p. 271 °C (CH_2Cl_2/MeOH). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.68 (br. s, 1 H, N*H*), 8.08 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.99 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.54 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.45 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.41 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.36 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.30 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.18 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 5.35 (s, 1 H, C*H*), 5.20 (s, 1 H, N*H*), 5.04 (s, 1 H, N*H*), 1.59 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 172.2 ($CONH_2$), 163.7 (CO), 136.5 (C), 136.3 (C), 133.1 (C), 132.1 (C), 129.8 (Ar*C*H), 129.5 (Ar*C*H), 128.4 (Ar*C*H), 127.2 (Ar*C*H), 125.1 (Ar*C*H), 121.4 (Ar*C*H), 121.1 (Ar*C*H), 115.7 (C), 112.9 (C), 112.7 (Ar*C*H), 63.1 (C*H*), 59.8 (C), 29.2 (*t*Bu) ppm. FTIR: ṽ = 3468, 3245, 2977, 1695, 1614, 1410, 1194 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{21}H_{21}N_3NaO_2]^+$: 370.1531; found 370.1529. $C_{21}H_{21}N_3O_2$·0.4 CH_3OH (475.58): calcd. C 71.35, H 6.32, N 11.66; found C 71.41, H 6.61, N 11.29.

6-*tert*-Butyl-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carbonitrile (16): DMSO (10.3 μL, 0.146 mmol, 2.4 equiv.) was added at –78 °C to a suspension of indolobenzazepinone **15** (22 mg, 0.06 mmol, 1 equiv.) in distilled dichloromethane (0.46 mL). Oxalyl chloride (7 μL, 0.08 mmol, 1.3 equiv.) was then added, followed by triethylamine (40.5 μL, 0.304 mmol, 5 equiv.). The mixture was allowed to warm to room temperature and stirred for 1 h. Water (10 mL) was added, and the mixture was extracted with ethyl acetate (2 × 10 mL). The combined organic extracts were dried ($MgSO_4$), and the solvents were evaporated in vacuo. The crude product was then purified by flash chromatography on silica gel (CH_2Cl_2/MeOH, 97:3) to give the title compound (11 mg, 55%) as a white solid; m.p. 228 °C (CH_2Cl_2/MeOH). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.32 (br. s, 1 H, N*H*), 8.14 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 8.08 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.57–7.62 (m, 1 H, Ar*H*), 7.51 (d, *J* = 8.1 Hz, 1 H, Ar*H*), 7.36–7.41 (m, 3 H, Ar*H*), 7.26 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 5.87 (s, 1 H, C*H*), 1.63 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 162.8 (CO), 136.6 (C), 133.1 (C), 132.7 (C), 130.4 (Ar*C*H), 128.6 (Ar*C*H), 128.3 (Ar*C*H), 127.4 (Ar*C*H), 126.9 (C), 126.0 (Ar*C*H), 125.2 (C), 122.1 (Ar*C*H), 121.8 (Ar*C*H), 117.4 (C), 116.7 (C), 112.6 (Ar*C*H), 60.9 (C), 48.9 (*C*H), 29.3 (*t*Bu) ppm. FTIR: ṽ = 3278, 2922, 1730, 1627, 1523, 1399, 1189 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{21}H_{19}N_3ONa]^+$: 352.1426; found 352.1422.

General Procedure for Deprotection of *tert*-Butyl Lactams 5g, 5h, 5q: Anisole (54 μL, 0.5 mmol, 10 equiv.) and TFA (0.57 mL, 7.5 mmol, 150 equiv.) were added to a solution of one of the *tert*-butyl lactams **5g**, **5h**, or **5q** (0.05 mmol, 1 equiv.) in CH_2Cl_2 (0.25 mL), and the reaction mixture was stirred at room temperature until complete conversion of starting material. Excess TFA was then removed in vacuo, and the resulting solid was purified by flash chromatography on silica gel (CH_2Cl_2/MeOH, 95:5).

***N*-Butyl-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (17):** Yield 13.9 mg (80%). Major rotamer. ^{1}H NMR (CD_3CN, 500 MHz, 25 °C): δ = 11.20 (s, 1 H, N*H*), 8.00–8.10 (m,

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2 H, Ar*H*), 7.48–7.63 (m, 2 H, Ar*H*), 7.33–7.42 (m, 2 H, Ar*H*), 7.21–7.30 (m, 2 H, Ar*H*), 4.91 (s, 1 H, C*H*), 2.81–2.91 (m, 1 H, C*H*NH AB system), 2.61–2.68 (m, 1 H, C*H*NH AB system), 0.60–0.75 (m, 4 H, 2 × CH_2), 0.33–0.46 (m, 3 H, CH_3) ppm. ^{13}C NMR (CD_3CN, 125 MHz, 25 °C): δ = 170.0 (CO), 162.7 (CO), 137.8 (Ar*C*H), 137.6 (C), 134.5 (C), 133.7 (C), 131.8 (Ar*C*H), 130.4 (C), 129.5 (Ar*C*H), 128.2 (Ar*C*H), 126.3 (C), 126.0 (Ar*C*H), 122.4 (Ar*C*H), 122.0 (Ar*C*H), 117.6 (C), 113.5 (Ar*C*H), 61.0 (*C*H), 39.7 (*C*H_2), 32.2 (*C*H_2), 20.2 (*C*H_2), 1.8 (*C*H_3) ppm. FTIR: $\tilde{\nu}$ = 3289, 1660, 1606, 1194 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{21}H_{21}N_3NaO$]$^+$: 370.1532; found 370.1528.

***N*-(2-Morpholinoethyl)-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (18):** Yield 16.0 mg (79%). Major rotamer. ^{1}H NMR (MeOD, 500 MHz, 25 °C): δ = 7.99–8.06 (m, 2 H, Ar*H*), 7.51–7.61 (m, 3 H, Ar*H*), 7.44 (t, *J* = 7.5 Hz, 1 H, Ar*H*), 7.34 (t, *J* = 7.5 Hz, 1 H, Ar*H*), 7.21 (t, *J* = 7.5 Hz, 1 H, Ar*H*), 5.02 (s, 1 H, C*H*), 3.42 (br. s, 4 H, 2 × CH_2O), 2.95–3.01 (m, 1 H, C*H*NH AB system), 2.77–2.83 (m, 1 H, C*H*NH AB system), 1.93–2.04 (m, 4 H, 2 × CH_2N), 1.64–1.69 (m, 1 H, C*H*N AB system), 1.53–1.58 (m, 1 H, C*H*N AB system) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 172.6 (CO), 166.6 (CO), 138.5 (C), 137.5 (C), 134.1 (C), 131.9 (Ar*C*H), 130.5 (Ar*C*H), 129.9 (Ar*C*H), 129.7 (C), 128.5 (Ar*C*H), 126.4 (C), 126.2 (Ar*C*H), 122.4 (2 × Ar*C*H), 118.5 (C), 113.9 (Ar*C*H), 67.9 (2 × *C*H_2O), 61.5 (*C*H), 57.9 (*C*H_2N), 54.0 (2 × *C*H_2N), 36.9 (*C*H_2NH) ppm. FTIR: $\tilde{\nu}$ = 3278, 2922, 1730, 1627, 1523, 1399, 1189 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{21}H_{19}N_3NaO$]$^+$: 352.1426; found 352.1422.

***N*-(*tert*-Butyl)-7-oxo-5,6,7,8-tetrahydroindolo[2,3-*d*][2]benzazepine-5-carboxamide (19):** Yield 17.3 mg (100%). Major rotamer. ^{1}H NMR (CD_3CN, 500 MHz, 25 °C): δ = 11.32 (s, 1 H, N*H*), 9.40 (d, *J* = 5.1 Hz, 1 H, N*H*), 8.05 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.83 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.69 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.57 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.34 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.26 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.18 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.03 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 5.22 (d, *J* = 5.1 Hz, 1 H, C*H*), 0.94 (s, 9 H, *t*Bu) ppm. ^{13}C NMR (CD_3CN, 125 MHz, 25 °C): δ = 170.3 (CO), 165.5 (CO), 139.0 (C), 137.2 (C), 135.6 (C), 130.2 (C), 130.1 (Ar*C*H), 129.8 (Ar*C*H), 129.2 (Ar*C*H), 129.0 (Ar*C*H), 126.1 (C), 125.8 (Ar*C*H), 123.4 (Ar*C*H), 123.3 (Ar*C*H), 122.9 (C), 114.2 (Ar*C*H), 59.0 (*C*H), 52.1 (C), 27.1 (*t*Bu) ppm. FTIR: $\tilde{\nu}$ = 3289, 1660, 1606, 1194 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{21}H_{21}N_3ONa$]$^+$: 370.1532; found 370.1528. $C_{21}H_{21}N_3O_2 \cdot 0.5\,CH_3OH$ (507.62): calcd. C 71.05, H 6.38, N 11.56; found C 70.71, H 6.27, N 11.15.

Methyl 2-[1-(*tert*-Butoxycarbonyl)-1*H*-indol-2-yl]benzoate (21): Degassed aqueous Na_2CO_3 (2 M, 17.3 mL, 34.6 mmol, 4.2 equiv.) was added to a solution of 1-(*tert*-butoxycarbonyl)indole-2-boronic acid (3 g, 11.5 mmol, 1.4 equiv.), methyl 2-iodobenzoate (2.15 g, 8.21 mmol, 1.0 equiv.), and tetrakis(triphenylphosphane)palladium (474 mg, 0.41 mmol, 0.05 equiv.) in degassed DME (185 mL), and the solution was stirred at reflux for 12 h. The mixture was cooled, and water (150 mL) was added. The mixture was extracted with EtOAc, the combined organic extracts were dried ($MgSO_4$) and filtered, and the solvents were evaporated. The resulting brown oil was purified by flash chromatography on silica gel (heptane/EtOAc, 90:10) to give the cross-coupling product **21** (2.8 g, 97%) as a pale yellow oil. ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.27 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 8.04 (dd, *J* = 7.7, 1.2 Hz, 1 H, Ar*H*), 7.54 (td, *J* = 7.7, 1.2 Hz, 1 H, Ar*H*), 7.52 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.45 (td, *J* = 7.7, 1.2 Hz, 1 H, Ar*H*), 7.41 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.31 (td, *J* = 7.7, 1.2 Hz, 1 H, Ar*H*), 7.22, (t, *J* = 7.7 Hz, 1 H, Ar*H*), 6.43 (s, 1 H, Ar*H*), 3.65 (s, 3 H, OCH_3), 1.24, (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 167.1 (CO), 150.1 (CO), 139.2 (C), 136.8 (C), 136.5 (C), 131.9 (Ar*C*H), 131.5 (Ar*C*H), 130.6 (C), 130.2 (Ar*C*H), 129.4 (C), 128.2 (Ar*C*H), 124.4 (Ar*C*H), 122.8 (Ar*C*H), 120.5 (Ar*C*H), 115.8 (Ar*C*H), 109.4 (Ar*C*H), 83.1 (Ar*C*H), 52.3 (O*C*H_3), 27.7 (*t*Bu) ppm. FTIR: $\tilde{\nu}$ = 2979, 1722, 1451, 1327, 1158, 745 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{21}H_{21}NNaO_4$]$^+$: 374.1368; found 374.1353.

Methyl 2-(1*H*-Indol-2-yl)benzoate (22): TFA (4.3 mL, 56 mmol, 7 equiv.) was added to a solution of **21** (2.8 g, 8 mmol, 1 equiv.) in CH_2Cl_2 (70 mL), and the solution was stirred at room temperature for 12 h. Saturated aqueous $NaHCO_3$ solution was added until complete neutralization of TFA, and the mixture was extracted with EtOAc (2 × 50 mL). The combined organic extracts were dried ($MgSO_4$) and filtered, and the solvents were evaporated. The resulting solid was purified by flash chromatography on silica gel (heptane/EtOAc, 1:1) to give **22** (1.86 g, 93%) as a white solid; m.p. 135 °C (heptane/EtOAc). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.59 (br. s, 1 H, N*H*), 7.78 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.74 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.62 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.54 (td, *J* = 7.7, 1.5 Hz, 1 H, Ar*H*), 7.42 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.38 (td, *J* = 7.7, 1.5 Hz, 1 H, Ar*H*), 7.20 (td, *J* = 7.7, 1.5 Hz, 1 H, Ar*H*), 7.10, (td, *J* = 7.7, 1.5 Hz, 1 H, Ar*H*), 6.70 (d, *J* = 1.5 Hz, 1 H, Ar*H*), 3.83 (s, 3 H, OCH_3) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 170.3 (CO), 137.1 (C), 136.8 (C), 133.0 (C), 131.9 (Ar*C*H), 131.1 (Ar*C*H), 130.4 (Ar*C*H), 130.2 (C), 128.6 (C), 127.7 (Ar*C*H), 122.6 (Ar*C*H), 120.8 (Ar*C*H), 120.2 (Ar*C*H), 111.5 (Ar*C*H), 103.5 (Ar*C*H), 53.0 (O*C*H_3) ppm. FTIR: $\tilde{\nu}$ = 3360, 1719, 1258, 1088 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{16}H_{13}NNaO_2$]$^+$: 274.0844; found 274.0837.

Methyl 2-(3-Formyl-1*H*-indol-2-yl)benzoate (23): A mixture of phosphoryl chloride (0.88 mL, 9.6 mmol, 1.5 equiv.) and *N*-methylformanilide (1.18 mL, 9.6 mmol, 1.5 equiv.) was stirred at room temperature for 15 min. A solution of **22** (1.6 g, 6.37 mmol, 1.0 equiv.) in 1,2-dichloroethane (32 mL) was added to the mixture, which was heated at reflux for 3 h. The warm mixture was poured into a solution of sodium acetate in ice/water (5.1 g, 51 mL), stirring was continued for 15 min, and the mixture was then extracted with EtOAc (2 × 25 mL). The combined organic extracts were dried ($MgSO_4$) and filtered, and the solvents were evaporated. The resulting solid was purified by flash chromatography on silica gel (heptane/EtOAc, 60:40) to give **23** (1.69 g, 95%) as a white solid; m.p. 214 °C (heptane/EtOAc). ^{1}H NMR ($CDCl_3$ + MeOD, 500 MHz, 25 °C): δ = 9.57 (s, 1 H, C*H*O), 8.24 (dd, *J* = 6.0, 3.1 Hz, 1 H, Ar*H*), 7.96 (d, *J* = 7.5 Hz, 1 H, Ar*H*), 7.56 (t, *J* = 7.5 Hz, 1 H, Ar*H*), 7.52 (t, *J* = 7.5 Hz, 1 H, Ar*H*), 7.4 (d, *J* = 7.5 Hz, 1 H, Ar*H*), 7.34 (dd, *J* = 6.0, 3.1 Hz, 1 H, Ar*H*), 7.20–7.23 (m, 2 H, Ar*H*), 3.66 (s, 3 H, OCH_3) ppm. ^{13}C NMR ($CDCl_3$ + MeOD, 75.5 MHz, 25 °C): δ = 186.5 (CO), 167.5 (CO), 149.3 (C), 136.0 (C), 132.8 (Ar*C*H), 131.8 (Ar*C*H), 131.6 (C), 130.7 (Ar*C*H), 130.5 (C), 129.9 (Ar*C*H), 125.4 (C), 124.1 (Ar*C*H), 123.0 (Ar*C*H), 121.8 (Ar*C*H), 115.7 (C), 111.6 (Ar*C*H), 52.6 (O*C*H_3) ppm. FTIR: $\tilde{\nu}$ = 3182, 1719, 1635, 1453, 1271, 743 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{17}H_{13}NNaO_3$]$^+$: 302.0793; found 302.0805.

Methyl 2-(1-Benzyl-3-formyl-1*H*-indol-2-yl)benzoate (24): A solution of **23** (0.15 g, 0.517 mmol, 1 equiv.) in dry THF (4 mL) was added at 0 °C to a suspension of sodium hydride (31 mg, 0.78 mmol, 60% in oil, 1.5 equiv.) in dry THF (4 mL). The reaction mixture was stirred for 45 min, and benzyl bromide (0.123 mL, 1.03 mmol, 2 equiv.) was added. The reaction mixture was allowed to warm to room temperature and left stirring overnight. The solvent was removed in vacuo, and the residue was dissolved in CH_2Cl_2 (15 mL) and water (15 mL). The aqueous layer was extracted with CH_2Cl_2 (3 × 10 mL). The combined organic extracts

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were dried ($MgSO_4$) and filtered, and the solvents were evaporated. The resulting brown oil was purified by flash chromatography on silica gel (heptane/EtOAc, 1:1) to give **24** (0.162 g, 85%) as a yellow, amorphous solid. ^{1}H NMR ($CDCl_3$, 300 MHz, 25 °C): δ = 9.53 (s, 1 H, C*H*O), 8.39–8.42 (m, 1 H, Ar*H*), 8.11–8.15 (m, 1 H, Ar*H*), 7.57 (qud, *J* = 7.3, 1.7 Hz, 2 H, Ar*H*), 7.18–7.35 (m, 7 H, Ar*H*), 6.91–6.97 (m, 2 H, Ar*H*), 5.22 (d, *J* = 16.4 Hz, 1 H, C*H*Ph AB system), 5.02 (d, *J* = 16.4 Hz, 1 H, C*H*Ph AB system), 3.62 (s, 3 H, OCH_3) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 185.7 (CO), 166.1 (CO), 151.0 (C), 137.0 (C), 136.3 (C), 133.0 (Ar*C*H), 132.1 (Ar*C*H), 131.8 (C), 131.0 (Ar*C*H), 130.4 (Ar*C*H), 129.8 (C), 128.9 (2 × Ar*C*H), 127.8 (Ar*C*H), 126.7 (2 × Ar*C*H), 125.5 (C), 124.1 (Ar*C*H), 123.3 (Ar*C*H), 122.2 (Ar*C*H), 116.5 (C), 110.8 (Ar*C*H), 52.6 (O*C*H_3), 48.3 (*C*H_2Ph) ppm. FTIR: $\tilde{\nu}$ = 1721, 1643, 1264 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{24}H_{19}NNaO_3]^+$: 392.1263; found 392.1253.

Methyl 2-[1-(Dimethylsulfamoyl)-3-formyl-1*H*-indol-2-yl]benzoate (25): A solution of **23** (0.30 g, 1.07 mmol, 1 equiv.) in THF (8 mL) was added at 0 °C to a suspension of sodium hydride (0.09 g, 2.14 mmol, 60% in oil) in dry THF (8 mL). The reaction mixture was stirred for 45 min, and *N*,*N*-dimethylsulfamoyl chloride (0.35 mL, 3.2 mmol) was added. The reaction mixture was allowed to warm to room temperature and left stirring overnight. The solvent was removed in vacuo, and the residue was dissolved in CH_2Cl_2 (30 mL) and water (20 mL). The aqueous layer was extracted with CH_2Cl_2 (3 × 10 mL). The combined organic extracts were dried ($MgSO_4$) and filtered, and the solvents were evaporated. The resulting brown oil was purified by flash chromatography on silica gel (heptane/EtOAc, 60:40) to give **25** (0.30 g, 73%) as a white solid; m.p. 163 °C (heptane/EtOAc). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.51 (s, 1 H, C*H*O), 8.37–8.40 (m, 1 H, Ar*H*), 8.16–8.21 (m, 1 H, Ar*H*), 8.01–8.04 (m, 1 H, Ar*H*), 7.60–7.66 (m, 2 H, Ar*H*), 7.48–7.50 (m, 1 H, Ar*H*), 7.37–7.42 (m, 2 H, Ar*H*), 3.69 (s, 3 H, OCH_3), 2.65 [s, 6 H, N(CH_3)$_2$] ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 187.1 (CO), 166.1 (CO), 150.0 (C), 136.7 (C), 133.3 (Ar*C*H), 132.5 (C), 131.5 (Ar*C*H), 130.8 (Ar*C*H), 130.5 (Ar*C*H), 129.9 (C), 126.0 (Ar*C*H), 125.5 (C), 125.0 (Ar*C*H), 122.2 (Ar*C*H), 119.5 (C), 114.4 (Ar*C*H), 52.8 (O*C*H_3), 38.0 [N(*C*H_3)$_2$] ppm. FTIR: $\tilde{\nu}$ = 1721, 1658, 1366, 1172 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{19}H_{18}N_2NaO_5S]^+$: 409.0834; found 409.0873.

General Procedure for Saponification of Indoles 23–25: Aqueous LiOH (1 M, 7.0 mmol, 7 mL, 5 equiv.) was added to a solution of oxo ester **23**, **24**, or **25** (1.40 mmol) in THF (9.5 mL), and the mixture was stirred at 60 °C overnight. The mixture was cooled to 0 °C, aqueous HCl (1 M) was added until pH 2–3, and the resulting mixture was extracted with EtOAc (3 × 20 mL). The combined organic extracts were dried ($MgSO_4$) and filtered, and the solvents were evaporated. The resulting solid was directly used without further purification.

2-(3-Formyl-1*H*-indol-2-yl)benzoic Acid (6a): Yield 371.3 mg (100%). White foam. ^{1}H NMR (MeOD, 500 MHz, 25 °C): δ = 9.56 (s, 1 H, C*H*O), 8.21 (d, *J* = 7.3 Hz, 1 H, Ar*H*), 8.13 (dd, *J* = 7.3, 1.3 Hz, 1 H, Ar*H*), 7.72 (td, *J* = 7.3, 1.3 Hz, 1 H, Ar*H*), 7.67 (td, *J* = 7.3, 1.3 Hz, 1 H, Ar*H*), 7.61 (dd, *J* = 7.3, 1.3 Hz, 1 H, Ar*H*), 7.44 (d, *J* = 7.3 Hz, 1 H, Ar*H*), 7.28 (td, *J* = 7.3, 1.3 Hz, 1 H, Ar*H*), 7.25 (td, *J* = 7.3, 1.3 Hz, 1 H, Ar*H*) ppm. ^{13}C NMR (MeOD, 75.5 MHz, 25 °C): δ = 187.6 (CO), 169.7 (CO), 137.9 (C), 134.1 (C), 133.7 (Ar*C*H), 132.9 (Ar*C*H), 132.2 (C), 131.9 (Ar*C*H), 131.2 (Ar*C*H), 126.9 (C), 125.0 (Ar*C*H), 123.8 (Ar*C*H), 122.5 (Ar*C*H), 116.8 (C), 112.8 (Ar*C*H), 112.1 (C) ppm. FTIR: $\tilde{\nu}$ = 3187, 1711, 1686, 1345, 1188 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{16}H_{11}NNaO_3]^+$: 288.0637; found 288.0650.

2-(1-Benzyl-3-formyl-1*H*-indol-2-yl)benzoic Acid (6b): Yield 497.5 mg (100%). Amorphous, pale yellow solid. ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.47 (s, 1 H, C*H*O), 8.37 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 8.12 (dd, *J* = 7.5, 1.4 Hz, 1 H, Ar*H*), 7.55 (qud, *J* = 7.5, 1.4 Hz, 2 H, Ar*H*), 7.29–7.32 (m, 2 H, Ar*H*), 7.25 (t, *J* = 7.1 Hz, 1 H, Ar*H*), 7.18 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.10–7.15 (m, 3 H, Ar*H*), 6.87 (d, *J* = 7.5 Hz, 2 H, Ar*H*), 5.13 (d, *J* = 16.6 Hz, 1 H, C*H*Ph AB system), 4.97 (d, *J* = 16.6 Hz, 1 H, C*H*Ph AB system) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 186.2 (CO), 169.7 (CO), 151.6 (C), 137.1 (C), 136.1 (C), 133.1 (Ar*C*H), 132.6 (Ar*C*H), 131.7 (Ar*C*H), 131.2 (C), 131.5 (Ar*C*H), 130.0 (C), 128.9 (2 × Ar*C*H), 127.8 (Ar*C*H), 126.7 (2 × Ar*C*H), 125.4 (C), 124.2 (Ar*C*H), 123.4 (Ar*C*H), 122.2 (Ar*C*H), 116.4 (C), 111.0 (Ar*C*H), 48.4 (*C*H_2Ph) ppm. FTIR: $\tilde{\nu}$ = 1725, 1676, 1354, 1188 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{23}H_{17}NNaO_3]^+$: 378.1106; found 378.1113.

2-[1-(Dimethylsulfamoyl-3-formyl-1*H*-indol-2-yl]benzoic Acid (6c): Yield 521.4 mg (100%). White foam. ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.46 (s, 1 H, C*H*O), 8.32–8.35 (m, 1 H, Ar*H*), 8.16 (dd, *J* = 7.8, 1.3 Hz, 1 H, Ar*H*), 7.92–7.96 (m, 1 H, Ar*H*), 7.64 (td, *J* = 7.5, 1.3 Hz, 1 H, Ar*H*), 7.59 (td, *J* = 7.5, 1.3 Hz, 1 H, Ar*H*), 7.47 (dd, *J* = 7.5, 1.3 Hz, 1 H, Ar*H*), 7.36–7.41 (m, 2 H, Ar*H*), 2.53 [s, 6 H, N(CH_3)$_2$] ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 187.3 (CO), 170.5 (CO), 149.7 (C), 136.8 (C), 133.6 (Ar*C*H), 132.3 (Ar*C*H), 131.4 (Ar*C*H), 131.1 (C), 130.5 (Ar*C*H), 130.2 (C), 126.0 (Ar*C*H), 125.3 (C), 124.9 (Ar*C*H), 122.1 (Ar*C*H), 119.5 (C), 114.3 (Ar*C*H), 37.8 [N(*C*H_3)$_2$] ppm. FTIR: $\tilde{\nu}$ = 2915, 1719, 1385, 1175 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{18}H_{16}N_2NaO_5S]^+$: 395.0678; found 395.0732.

General Procedure for Ugi 4-CRs. Syntheses of Compounds 7a, 7b, 7d, 7f–7h: The oxo acid (**6a**–**6c**, 0.134 mmol, 1 equiv.) and the corresponding primary amine **13** (0.134 mmol, 1 equiv.) were dissolved in methanol (0.85 mL), and the solution was stirred at room temperature for 10 min. Isocyanide (0.134 mmol, 1 equiv.) was added, and the resulting mixture was heated at 50 °C overnight. Aqueous HCl solution (0.1 M, 1 mL) was added, and the mixture was stirred for 15 min at room temperature. Water (10 mL) was added, and the mixture was extracted with CH_2Cl_2 (3 × 10 mL). The combined organic extracts were dried ($MgSO_4$), filtered, and concentrated in vacuo. The resulting brown oil was purified by flash chromatography on silica gel (CH_2Cl_2/MeOH, 95:5) to give compounds **7a**, **7b**, **7d**, **7f**–**7h**.

***N*,6-Di-*tert*-Butyl-5-oxo-5,6,7,12-tetrahydroindolo[3,2-*d*][2]benzazepine-7-carboxamide (7a):** Yield 4.3 mg (8%). White solid; m.p. 276 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 10.02 (s, 1 H, N*H*), 7.84 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.54 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.51 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.27 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 7.17 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 7.13 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 6.96 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 6.83 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 5.58 (s, 1 H, C*H*), 4.93 (s, 1 H, N*H*), 1.67 (s, 9 H, *t*Bu), 0.66 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 170.7 (CO), 168.9 (CO), 137.5 (C), 137.0 (C), 134.9 (C), 132.8 (Ar*C*H), 130.0 (Ar*C*H), 127.4 (Ar*C*H), 127.2 (Ar*C*H), 126.0 (C), 124.3 (Ar*C*H), 123.0 (C), 120.4 (Ar*C*H), 117.5 (Ar*C*H), 114.0 (C), 112.6 (Ar*C*H), 60.0 (*C*H), 57.7 (C), 51.1 (C), 29.3 (*t*Bu), 28.1 (*t*Bu) ppm. FTIR: $\tilde{\nu}$ = 3183, 1691, 1608, 1597, 1360, 1198, 733 cm^{-1}. HRMS (ESI$^+$) calcd. for $[C_{25}H_{29}N_3NaO_2]^+$: 426.2171; found 426.2167.

***N*-*tert*-Butyl-6-(4-methoxybenzyl)-5-oxo-5,6,7,12-tetrahydroindolo-[3,2-*d*][2]benzazepine-7-carboxamide (7b):** Yield 36.3 mg (58%). White solid; m.p. 228 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.90 (s, 1 H, N*H*), 7.93 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.45 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.26 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.20 (t,

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J = 7.9 Hz, 1 H, Ar*H*), 7.12–7.16 (m, 3 H, Ar*H*), 7.00 (t, *J* = 7.9 Hz, 1 H, Ar*H*), 6.92–6.95 (m, 2 H, Ar*H*), 6.71–6.74 (m, 2 H, Ar*H*), 5.32 (d, *J* = 14.7 Hz, 1 H, C*H*PMB AB system), 5.04 (s, 1 H, C*H*), 4.98 (s, 1 H, N*H*), 4.72 (d, *J* = 14.7 Hz, 1 H, C*H*PMB AB system), 3.76 (s, 3 H, CH_3), 0.68 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 169.9 (CO), 168.1 (CO), 159.4 (CO), 137.0 (C), 134.7 (C), 134.5 (C), 132.9 (Ar*C*H), 130.8 (Ar*C*H), 130.4 (2×Ar*C*H), 128.5 (C), 128.3 (C), 127.3 (Ar*C*H), 126.4 (C), 125.0 (Ar*C*H), 123.3 (Ar*C*H), 120.3 (Ar*C*H), 117.8 (Ar*C*H), 114.3 (2×Ar*C*H), 113.4 (C), 112.0 (Ar*C*H), 55.6 (*C*H), 55.5 (*C*H_3), 53.6 (*C*H_2PMB), 51.3 (C), 28.1 (*t*Bu) ppm. FTIR: ṽ = 3381, 3150, 1686, 1607, 1504, 1230, 736 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{29}H_{29}N_3NaO_3$]$^+$: 490.2107; found 490.2133. $C_{29}H_{29}N_3O_3$·0.1 H_2O (467.56): calcd. C 74.21, H 6.27, N 8.95; found C 73.79, H 5.84, N 8.82.

12-Benzyl-*N*-(*tert*-butyl)-6-(4-methoxybenzyl)-5-oxo-5,6,7,12-tetrahydroindolo[3,2-*d*][2]benzazepine-7-carboxamide (7d): Yield 44.8 mg (60%). White solid; m.p. 248 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.06 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.40 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.34 (t, *J* = 7.7 Hz, 1 H, Ar*H*), 7.26–7.33 (m, 3 H, Ar*H*), 7.22 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.17–7.20 (m, 2 H, Ar*H*), 7.12–7.15 (m, 2 H, Ar*H*), 7.02–7.05 (m, 4 H, Ar*H*), 6.67–6.70 (m, 2 H, Ar*H*), 5.50 (d, *J* = 17.7 Hz, 1 H, C*H*Bn AB system), 5.45 (d, *J* = 17.7 Hz, 1 H, C*H*Bn AB system), 5.28 (d, *J* = 14.3 Hz, 1 H, C*H*PMB AB system), 5.25 (br. s, 1 H, N*H*), 5.19 (s, 1 H, C*H*), 4.68 (d, *J* = 14.3 Hz, 1 H, C*H*PMB AB system), 3.71 (s, 3 H, OCH_3), 0.77 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 169.1 (CO), 167.9 (CO), 159.4 (CO), 138.2 (C), 137.5 (C), 137.1 (C), 136.4 (C), 133.0 (Ar*C*H), 130.6 (Ar*C*H), 130.4 (2×Ar*C*H), 129.2 (2×Ar*C*H), 128.9 (C), 128.5 (Ar*C*H), 127.8 (Ar*C*H), 127.6 (C), 126.2 (Ar*C*H), 126.0 (C), 125.9 (2×Ar*C*H), 123.4 (Ar*C*H), 120.9 (Ar*C*H), 118.1 (Ar*C*H), 115.5 (C), 114.3 (2×Ar*C*H), 111.0 (Ar*C*H), 55.8 (*C*H), 55.5 (O*C*H_3), 53.1 (*C*H_2PMB), 51.2 (C), 48.6 (*C*H_2Bn), 28.1 (*t*Bu) ppm. FTIR: ṽ = 3280, 1665, 1612, 1514 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{36}H_{35}N_3NaO_3$]$^+$: 580.2576; found 580.2578.

***N*-(*tert*-Butyl)-12-(dimethylsulfamoyl)-6-(4-methoxybenzyl)-5-oxo-5,6,7,12-tetrahydroindolo[3,2-*d*][2]benzazepine-7-carboxamide (7f):** Yield 59.3 mg (77%). White solid; m.p. 169 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.14 (d, *J* = 8.4 Hz, 1 H, Ar*H*), 7.88 (dd, *J* = 7.7, 1.1 Hz, 1 H, Ar*H*), 7.73 (dd, *J* = 7.7, 1.1 Hz, 1 H, Ar*H*), 7.47 (td, *J* = 7.7, 1.1 Hz, 1 H, Ar*H*), 7.42 (td, *J* = 7.7, 1.1 Hz, 1 H, Ar*H*), 7.30 (td, *J* = 7.7, 1.1 Hz, 1 H, Ar*H*), 7.18–7.22 (m, 3 H, Ar*H*), 7.10 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 6.64–6.67 (m, 2 H, Ar*H*), 5.32 (d, *J* = 14.3 Hz, 1 H, C*H*PMB AB system), 5.11 (s, 1 H, C*H*), 5.03 (br. s, 1 H, N*H*), 4.52 (d, *J* = 14.3 Hz, 1 H, C*H*PMB AB system), 3.67 (s, 3 H, OCH_3), 2.26 [s, 6 H, N(CH_3)$_2$], 0.78 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 169.1 (CO), 166.0 (CO), 159.6 (CO), 139.1 (C), 136.7 (C), 135.5 (C), 130.9 (Ar*C*H), 130.6 (Ar*C*H), 130.4 (2×Ar*C*H), 129.6 (Ar*C*H), 128.2 (C), 128.9 (Ar*C*H), 128.0 (C), 127.6 (C), 125.8 (Ar*C*H), 125.1 (C), 124.4 (Ar*C*H), 118.0 (Ar*C*H), 117.5 (Ar*C*H), 114.3 (2×Ar*C*H), 55.8 (*C*H), 55.5 (*C*H_3), 53.0 (*C*H_2PMB), 51.5 (C), 38.6 [N(*C*H_3)$_2$], 28.1 (*t*Bu) ppm. FTIR: ṽ = 3408, 1703, 1630, 1508, 1381, 1170, 756 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{31}H_{34}N_4NaO_5S$]$^+$: 597.2148; found 597.2178.

6-Allyl-*N*-(*tert*-butyl)-12-(dimethylsulfamoyl)-5-oxo-5,6,7,12-tetrahydroindolo[3,2-*d*][2]benzazepine-7-carboxamide (7g): Yield 55.0 mg (83%). White solid; m.p. 219 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.23 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.86 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.77 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.54 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.50 (t, *J* = 7.9 Hz, 1 H, Ar*H*), 7.35–7.45 (m, 3 H, Ar*H*), 5.69 (m, 1 H, C*H*), 5.30 (d, *J* = 17.1 Hz, 1 H, C*H*), 5.17 (d, *J* = 9.6 Hz, 1 H, C*H*), 5.11 (s, 1 H, C*H*), 5.00 (s, 1 H, N*H*), 4.86 (dd, *J* = 15.0, 5.3 Hz, 1 H, C*H*), 4.03 (dd, *J* = 15.0, 5.3 Hz, 1 H, C*H*), 2.32 [s, 6 H, N(CH_3)$_2$], 0.83 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 169.0 (CO), 166.0 (CO), 139.5 (C), 137.1 (C), 135.7 (C), 133.3 (*C*H), 130.8 (Ar*C*H), 130.7 (Ar*C*H), 129.6 (Ar*C*H), 129.1 (Ar*C*H), 127.9 (C), 127.5 (C), 126.0 (Ar*C*H), 124.8 (1 C, Ar*C*H), 119.5 (*C*H_2), 118.3 (Ar*C*H), 117.9 (Ar*C*H), 55.8 (*C*H), 52.9 (*C*H_2), 51.7 (C), 35.6 [N(*C*H_3)$_2$], 28.2 (*t*Bu) ppm. FTIR: ṽ = 3348, 1673, 1618, 1504, 1373, 750 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{26}H_{30}N_4NaO_4S$]$^+$: 517.1885; found 517.1884. $C_{26}H_{30}N_4O_4S$ (494.61): calcd. C 63.14, H 6.11, N 11.33; found C 62.97, H 6.05, N 11.26.

***N*-(*tert*-Butyl)-6-(2,4-dimethoxybenzyl)-12-(dimethylsulfamoyl)-5-oxo-5,6,7,12-tetrahydroindolo[3,2-*d*][2]benzazepine-7-carboxamide (7h):** Yield 72.1 mg (89%). White solid; m.p. 235 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.15 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.83 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.77 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.45 (t, *J* = 7.9 Hz, 1 H, Ar*H*), 7.26–7.41 (m, 5 H, Ar*H*), 6.40 (s, 1 H, Ar*H*), 6.39 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 5.36 (s, 1 H, C*H*), 5.35 (s, 1 H, N*H*), 5.06 (d, *J* = 14.2 Hz, 1 H, C*H*DMB AB system), 4.76 (d, *J* = 14.2 Hz, 1 H, , C*H*DMBAB system), 3.83 (s, 3 H, OCH_3), 3.73 (s, 3 H, OCH_3), 2.27 [s, 6 H, N(CH_3)$_2$], 0.77 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 169.3 (CO), 166.5 (CO), 161.3 (CO), 158.9 (CO), 139.3 (C), 136.5 (C), 135.4 (C), 132.8 (Ar*C*H), 131.1 (Ar*C*H), 130.1 (Ar*C*H), 129.4 (Ar*C*H), 128.8 (C), 128.5 (Ar*C*H), 127.9 (C), 126.2 (C), 125.6 (Ar*C*H), 124.4 (Ar*C*H), 118.3 (Ar*C*H), 117.7 (C), 117.6 (Ar*C*H), 105.1 (Ar*C*H), 99.1 (Ar*C*H), 56.1 (*C*H), 56.0 (O*C*H_3), 55.6 (O*C*H_3), 51.1 (C), 47.2 (*C*H_2), 38.6 [N(*C*H_3)$_2$], 28.0 (*t*Bu) ppm. FTIR: ṽ = 3415, 1631, 1504, 1174 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{26}H_{30}N_4NaO_4S$]$^+$: 627.2253; found 627.2227.

General Procedure for Ugi 4-CRs. Syntheses of Compounds 7i–7k: Compound **6c** (0.134 mmol, 1 equiv.) and ammonia in EtOH (2 M, 0.134 mmol, 67 μL, 1 equiv.) were dissolved in methanol (0.20 mL), and the solution was stirred at room temperature for 10 min. Isocyanide (0.134 mmol, 1 equiv.) was added, and the resulting mixture was heated at 50 °C overnight. Aqueous HCl solution (0.1 M, 1 mL) was added, and the mixture was stirred for 15 min at room temperature. Water (10 mL) was added, the mixture was extracted with CH_2Cl_2 (3×10 mL), and the combined organic extracts were dried ($MgSO_4$), filtered, and concentrated in vacuo. The resulting brown oil was purified by flash chromatography on silica gel (CH_2Cl_2/MeOH, 95:5) to give compounds **7i**–**7k**.

***N*-(*tert*-Butyl)-12-(dimethylsulfamoyl)-5-oxo-5,6,7,12-tetrahydroindolo[3,2-*d*][2]benzazepine-7-carboxamide (7i):** Yield 26.8 mg (44%). White solid; m.p. 154 °C (Et_2O). Major rotamer (63%): ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.22 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.89 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.78 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.68 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 7.54 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.44 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 7.38 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 7.29 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 5.55 (s, 1 H, N*H*), 5.02 (d, *J* = 8.2 Hz, 1 H, C*H*), 2.35 [s, 6 H, N(CH_3)$_2$], 0.88 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 171.5 (CO), 166.5 (CO), 139.5 (C), 136.8 (C), 133.3 (C), 131.8 (Ar*C*H), 130.3 (Ar*C*H), 130.0 (Ar*C*H), 128.9 (Ar*C*H), 128.5 (C), 128.3 (C), 126.3 (C), 126.1 (Ar*C*H), 125.0 (Ar*C*H), 118.3 (Ar*C*H), 117.9 (Ar*C*H), 51.9 (C), 51.0 (*C*H), 38.7 [N(*C*H_3)$_2$], 28.2 (*t*Bu) ppm. Minor rotamer (37%): ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.23 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.91 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.84 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.68 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 7.58 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.49 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 7.35 (t, *J* =

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7.8 Hz, 1 H, Ar*H*), 7.30 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 5.69 (s, 1 H, N*H*), 4.53 (d, *J* = 8.2 Hz, 1 H, C*H*), 2.26 [s, 6 H, N(CH_3)$_2$], 1.43 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 171.4 (CO), 165.6 (CO), 138.7 (C), 136.8 (C), 132.9 (C), 132.0 (Ar*C*H), 129.6 (Ar*C*H), 129.3 (Ar*C*H), 129.2 (Ar*C*H), 128.2 (C), 128.0 (C), 126.1 (C), 125.5 (Ar*C*H), 124.4 (Ar*C*H), 120.0 (Ar*C*H), 117.7 (Ar*C*H), 53.0 (C), 51.7 (*C*H), 38.5 [N(*C*H_3)$_2$], 28.9 (*t*Bu) ppm. FTIR: ν̃ = 3302, 1643, 1365, 1172 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{23}H_{26}N_4NaO_4S$]$^+$: 477.1572; found 477.1603. $C_{23}H_{26}N_4O_4S$·0.42 CH_2Cl_2 (490.21): calcd. C 57.38, H 5.52, N 11.43; found C 57.67, H 5.18, N 11.04.

***N*-Benzyl-12-(dimethylsulfamoyl)-5-oxo-5,6,7,12-tetrahydroindolo-[3,2-*d*][2]benzazepine-7-carboxamide (7j):** Yield 32.1 mg (49%). White, amorphous solid. Major rotamer (57%): ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.10–8.23 (m, 2 H, Ar*H*, N*H*), 7.82 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.69 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.08–7.61 (m, 10 H, Ar*H*), 6.31 (br. t, 1 H, N*H*Bn), 5.17 (d, *J* = 7.9 Hz, 1 H, C*H*), 4.14 (d, *J* = 15.0 Hz, 1 H, C*H*Ph AB system), 3.94 (d, *J* = 15.0 Hz, 1 H, C*H*Ph AB system), 2.33 [s, 6 H, N(CH_3)$_2$] ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 171.4 (CO), 167.9 (CO), 139.6 (C), 137.4 (C), 132.6 (C), 131.9 (Ar*C*H), 129.6 (C), 129.3 (C), 129.2 (C), 129.1 (Ar*C*H), 129.0 (2×Ar*C*H), 128.6 (Ar*C*H), 128.1 (C), 127.9 (Ar*C*H), 127.5 (2×Ar*C*H), 126.1 (Ar*C*H), 125.5 (Ar*C*H), 125.1 (Ar*C*H), 118.3 (Ar*C*H), 118.1 (Ar*C*H), 50.6 (*C*H), 44.0 (*C*H_2), 38.7 [N(*C*H_3)$_2$] ppm. Minor rotamer (43%): ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.10–8.23 (m, 2 H, Ar*H*, N*H*), 7.87 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.77 (d, *J* = 7.7 Hz, 1 H, Ar*H*), 7.08–7.61 (m, 10 H, Ar*H*), 6.51 (br. t, 1 H, N*H*Bn), 4.72 (dd, *J* = 15.0, 5.9 Hz, 1 H, C*H*Ph), 4.67 (d, *J* = 7.9 Hz, 1 H, C*H*), 4.48 (dd, *J* = 15.0, 5.9 Hz, 1 H, C*H*Ph), 2.25 [s, 6 H, N(CH_3)$_2$] ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 168.6 (CO), 166.6 (CO), 139.5 (C), 137.7 (C), 133.4 (C), 130.4 (Ar*C*H), 129.6 (C), 129.3 (C), 129.2 (C), 128.7 (2×Ar*C*H), 128.5 (Ar*C*H), 128.4 (C), 128.3 (Ar*C*H), 128.0 (2×Ar*C*H), 127.2 (Ar*C*H), 125.2 (Ar*C*H), 124.7 (Ar*C*H), 124.3 (Ar*C*H), 119.5 (Ar*C*H), 117.8 (Ar*C*H), 51.1 (*C*H), 44.7 (*C*H_2), 38.5 [N(*C*H_3)$_2$] ppm. FTIR: ν̃ = 3352, 1677, 1634, 1379 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{26}H_{24}N_4NaO_4S$]$^+$: 511.1416; found 511.1417.

***N*-Butyl-12-(dimethylsulfamoyl)-5-oxo-5,6,7,12-tetrahydroindolo-[3,2-*d*][2]benzazepine-7-carboxamide (7k):** Yield 28.6 mg (47%). White, amorphous solid. Major rotamer (54%): ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.23 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.90 (t, *J* = 7.9 Hz, 1 H, Ar*H*), 7.76 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.27–7.62 (m, 5 H, Ar*H*), 5.89 (br. t, 1 H, N*H*), 5.11 (d, *J* = 8.0 Hz, 1 H, C*H*), 3.55–3.62 (m, 1 H, C*H*N), 2.88–2.94 (m, 1 H, C*H*N), 2.36 [s, 6 H, N(CH_3)$_2$], 1.44–1.53 (m, 2 H, CH_2), 0.89 (t, *J* = 7.3 Hz, 3 H, CH_3), 0.80–0.86 (m, 2 H, CH_2) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 171.7 (CO), 167.7 (CO), 139.6 (C), 137.3 (C), 135.1 (C), 131.9 (Ar*C*H), 130.4 (Ar*C*H), 129.6 (Ar*C*H), 129.3 (C), 128.9 (Ar*C*H), 126.1 (Ar*C*H), 125.8 (C), 125.3 (C), 125.1 (Ar*C*H), 119.4 (Ar*C*H), 118.1 (Ar*C*H), 50.5 (*C*H), 39.8 (*C*H_2), 38.7 [N(*C*H_3)$_2$], 31.6 (*C*H_2), 18.9 (*C*H_2), 13.8 (*C*H_3) ppm. Minor rotamer (46%): ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 8.12 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.90 (t, *J* = 7.9 Hz, 1 H, Ar*H*), 7.82 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.27–7.62 (m, 5 H, Ar*H*), 6.03 (br. t, 1 H, N*H*), 4.63 (d, *J* = 8.0 Hz, 1 H, C*H*), 3.29–3.36 (m, 1 H, C*H*N), 2.74–2.81 (m, 1 H, C*H*N), 2.26 [s, 6 H, N(CH_3)$_2$], 1.27–1.35 (m, 2 H, CH_2), 0.81–0.89 (m, 2 H, CH_2), 0.67 (t, *J* = 7.3 Hz, 3 H, CH_3) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 168.7 (CO), 166.7 (CO), 138.8 (C), 136.9 (C), 132.9 (C), 131.8 (Ar*C*H), 130.3 (Ar*C*H), 129.3 (Ar*C*H), 128.5 (C), 128.4 (Ar*C*H), 125.8 (C), 125.5 (Ar*C*H), 124.7 (Ar*C*H), 124.4 (C), 118.4 (Ar*C*H), 117.8 (Ar*C*H), 51.1 (*C*H), 40.2 (*C*H_2), 38.6 [N(*C*H_3)$_2$], 31.3 (*C*H_2), 20.2 (*C*H_2), 14.4 (*C*H_3) ppm. FTIR: ν̃ = 3289, 1643, 1380, 1172 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{23}H_{26}N_4NaO_4S$]$^+$: 477.1572; found 477.1567. $C_{23}H_{26}N_4O_4S$·0.3 $C_4H_{10}O$ (454.54): calcd. C 60.96, H 6.13, N 11.75; found C 61.08, H 6.27, N 11.41.

General Procedure for Deprotection of Indolobenzazepinones 7. Syntheses of Compounds 26–28: A mixture of anisole, trifluoromethanesulfonic acid, and trifluoroacetic acid (1:1:10, 1 mL) was added to one of the indolobenzazepinones **7** (0.051 mmol, 1 equiv.), and the solution was stirred at room temperature for 1 h. The mixture was very slowly added to an ice-cold saturated aqueous $NaHCO_3$ solution (20 mL) and extracted with EtOAc (2×10 mL). The combined organic extracts were dried ($MgSO_4$) and filtered, and the solvents were evaporated. The resulting yellow solid was purified by flash chromatography on silica gel (CH_2Cl_2/MeOH, 95:5).

***N*-(*tert*-Butyl)-6-(4-methoxybenzyl)-5-oxo-5,6,7,12-tetrahydroindolo-[3,2-*d*][2]benzazepine-7-carboxamide (26):** Yield 20.1 mg (86%). White solid; m.p. 228 °C (Et_2O). ^{1}H NMR ($CDCl_3$, 500 MHz, 25 °C): δ = 9.90 (s, 1 H, N*H*), 7.93 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.45 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.26 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.20 (t, *J* = 7.9 Hz, 1 H, Ar*H*), 7.12–7.16 (m, 3 H, Ar*H*), 7.00 (t, *J* = 7.9 Hz, 1 H, Ar*H*), 6.92–6.95 (m, 2 H, Ar*H*), 6.71–6.74 (m, 2 H, Ar*H*), 5.32 (d, *J* = 14.7 Hz, 1 H, C*H*PMB AB system), 5.04 (s, 1 H, C*H*), 4.98 (s, 1 H, N*H*), 4.72 (d, *J* = 14.7 Hz, 1 H, C*H*PMB AB system), 3.76 (s, 3 H, CH_3), 0.68 (s, 9 H, *t*Bu) ppm. ^{13}C NMR ($CDCl_3$, 75.5 MHz, 25 °C): δ = 169.9 (CO), 168.1 (CO), 159.4 (CO), 137.0 (C), 134.7 (C), 134.5 (C), 132.9 (Ar*C*H), 130.8 (Ar*C*H), 130.4 (2×Ar*C*H), 128.5 (C), 128.3 (C), 127.3 (Ar*C*H), 126.4 (C), 125.0 (Ar*C*H), 123.3 (Ar*C*H), 120.3 (Ar*C*H), 117.8 (Ar*C*H), 114.3 (2×Ar*C*H), 113.4 (C), 112.0 (Ar*C*H), 55.6 (*C*H), 55.5 (*C*H_3), 53.6 (*C*H_2PMB), 51.3 (C), 28.1 (*t*Bu) ppm. FTIR: ν̃ = 3381, 3150, 1686, 1607, 1504, 1230, 736 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{29}H_{29}N_3NaO_3$]$^+$: 490.2107; found 490.2133.

***N*-(*tert*-Butyl)-5-oxo-5,6,7,12-tetrahydroindolo[3,2-*d*][2]benzazepine-7-carboxamide (27):** Yield 12.3 mg (71%). White solid; m.p. 279 °C (Et_2O). ^{1}H NMR (MeOD, 500 MHz, 25 °C): δ = 8.02 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.75 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.69 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.66 (t, *J* = 7.9 Hz, 1 H, Ar*H*), 7.48 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.47 (d, *J* = 7.9 Hz, 1 H, Ar*H*), 7.22 (t, *J* = 7.9 Hz, 1 H, Ar*H*), 7.19 (t, *J* = 7.9 Hz, 1 H, Ar*H*), 5.18 (s, 1 H, C*H*), 1.07 (s, 9 H, *t*Bu) ppm. ^{13}C NMR (MeOD, 75.5 MHz, 25 °C): δ = 172.5 (CO), 170.6 (CO), 138.7 (C), 135.8 (C), 134.4 (C), 133.1 (Ar*H*), 133.0 (Ar*H*), 131.4 (C), 128.8 (Ar*H*), 127.3 (Ar*H*), 127.2 (C), 124.2 (Ar*H*), 121.3 (Ar*H*), 119.3 (Ar*H*), 115.4 (C), 113.0 (Ar*H*), 52.6 (C), 28.6 (*t*Bu) ppm. FTIR: ν̃ = 3326, 1675, 1606, 1588, 1591 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{21}H_{21}N_3NaO_2$]$^+$: 370.1531; found 370.1509. $C_{21}H_{21}N_3O_2$·0.22 CH_2Cl_2 (366.10): calcd. C 69.62, H 5.90, N 11.48; found C 69.98, H 6.01, N 10.97.

***N*-(Benzyl)-5-oxo-5,6,7,12-tetrahydroindolo[3,2-*d*][2]benzazepine-7-carboxamide (28):** Yield 17.7 mg (93%). White foam. ^{1}H NMR (MeOD, 500 MHz, 25 °C): δ = 8.01 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.72 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.64 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 7.63 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.47 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.44 (t, *J* = 7.8 Hz, 1 H, Ar*H*), 7.20 (d, *J* = 7.8 Hz, 1 H, Ar*H*), 7.06–7.11 (m, 4 H, Ar*H*), 6.72–6.76 (m, 2 H, Ar*H*), 5.37 (s, 1 H, C*H*), 4.27 (d, *J* = 15.2 Hz, 1 H, C*H*Bn AB system), 4.11 (d, *J* = 15.2 Hz, 1 H, C*H*Bn AB system) ppm. ^{13}C NMR (MeOD, 75.5 MHz, 25 °C): δ = 172.1 (CO), 165.6 (CO), 139.6 (C), 138.7 (C), 133.2 (Ar*H*), 133.1 (Ar*H*), 131.2 (C), 129.5 (2×Ar*H*), 128.8 (Ar*H*), 128.1 (2×Ar*H*), 127.9 (Ar*H*), 127.7 (C), 127.4 (Ar*H*), 124.1 (Ar*H*), 121.4 (Ar*H*), 119.2 (Ar*H*), 114.8 (C), 112.9 (Ar*H*), 51.7 (*C*H), 44.5 (*C*H_2) ppm. FTIR: ν̃ = 3328, 1676, 1612, 1590 cm^{-1}. HRMS (ESI$^+$) calcd. for [$C_{24}H_{19}N_3NaO_2$]$^+$: 404.1375; found 404.1388.

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[18] Whereas deprotected indolo-benzazepinone **18** inhibits tubulin polymerization with an IC_{50} of 6.2 μM, its *tert*-butyl precursor **5h** displays a more potent inhibitory activity of 1.8 μM, comparable with that of colchicine (2.2 μM).

[19] Deprotection of the *N*-(Boc)indole derivative **21** was found to be necessary since the Vilsmeier–Haack reaction only occurred with the free NH compound.

[20] The presence of a Boc or SO_2Ph group on the indole nitrogen proved to be incompatible with the basic conditions used to generate the carboxylic acid, in contrast to the use of the benzyl and the dimethylsulfamoyl groups.

[21] No satisfactory explanation for the lack of reactivity observed during the reaction between indoles **6**, *tert*-butylamine **13g**, and *tert*-butyl isocyanide **14g** has so far been found.

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