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N,N′-Diarylureas: A New Family of Atropisomers Exhibiting Highly Diastereoselective Reactivity

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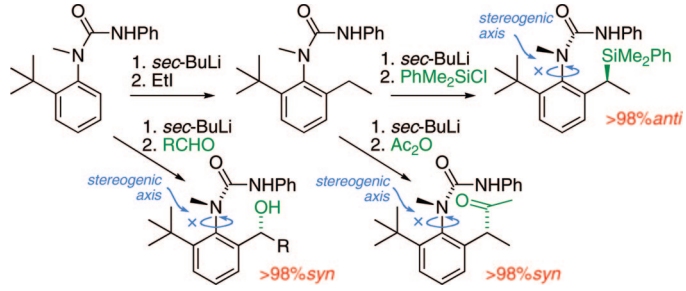

2,6-Disubstituted *N*-aryl ureas rotate slowly about their Ar—N bonds and can exist as separable atropisomers. They also react remarkably diastereoselectively, with the urea axis controlling new stereogenic centers with high fidelity in a variety of nucleophilic and electrophilic addition reactions. The sense of diastereoselectivity in lateral lithiation—electrophilic quench reactions is electrophile-dependent and appears to be the result of stereospecific reaction with one of two interconvertible diastereoisomeric organolithiums.

Introduction

Several classes of compounds other than the well-known biaryls[1] exhibit atropisomerism (stereochemistry due to slow bond rotation).[2] To date, these have been principally benzamides and anilides and their derivatives.[3] In this paper, we report for the first time that atropisomerism is displayed by simple aromatic ureas, and we show that several of their reactions, including their lateral lithiation—electrophilic quench,[4] exhibit remarkably high levels of stereoselectivity. These observations open up the possibility that aromatic ureas might provide a useful chiral scaffold for the development of new ligands or catalysts.[5]

Results and Discussion

We have previously shown that N-methylated *N,N′*-diarylureas **1** may be functionalized regioselectively via ortholithiation to give dianions **2**.[6] When **2** was quenched at −78 °C with an aldehyde as the electrophile, two separable isomeric products **3** were formed (Scheme 1 and Table 1, entries 1−3).[7] These

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SCHEME 1. Addition of Orthollithiated Ureas to Aldehydes

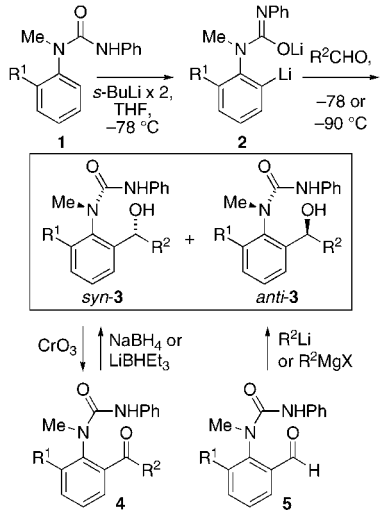

TABLE 1. Atroposelective Formation of Alcohols 3

entry	R^1 = *t*-Bu and R^2 =	Me	Et	*i*-Pr	Ph	Me[a]
	product **3**	**3a**	**3b**	**3c**	**3d**	**3e**
1	yield from **1** (−90 °C) (%)	79	89	69	76	95
	Ratio syn/anti-**3**					
2	from **1** (−90 °C)	99:1	97:3	98:2	70:30	
3	from **1** (−78 °C)	84:16	83:17	97:3	63:37	80:20
4	from **4** ($NaBH_4$)[b]	55:45	65:35	79:21	77:23	
5	from **4** ($LiBHEt_3$)[c]	51:49	56:44	62:38	92:8	
6	from **5**	80:20[d]			92:8[e]	
		50:50[f]				
7	after heating	78:22[g]				62:38[h]

[a] R^1 = *i*-Pr. [b] Yields quantitative. [c] Yields 80−100%. [d] MeLi (88%). [e] PhMgBr (63%). [f] MeMgBr (44%). [g] From *syn*-**3a**: ratio reached after 18 h, 110 °C, toluene. [h] From *syn*-**3e**: equilibrium ratio determined after 48 h, 70 °C, THF.

products were shown to be pairs of atropisomeric diastereoisomers of **3a**−**e** by NMR and by oxidation of each (or of the product mixture) to a single ketone **4a**−**d**. X-ray crystallography proved the syn stereochemistry for the major isomer of **3d** and the anti stereochemistry for the minor diastereoisomer of **3c** (Figure 1a,b),[8] and we assumed the syn stereochemistry for the other major isomers, all of which were the less polar of each pair. As shown in Table 1, the stereoselectivity was significantly higher when the addition reactions were carried out at −90 °C (entries 2 and 3 in Table 1).

To establish the stability of the atropisomers *syn*- and *anti*-**3** with respect to epimerization by rotation about the stereogenic Ar−N bond, *syn*-**3e** was dissolved in THF and heated at 70 °C. Epimerization eventually gave an equilibrium mixture of 62:38 (Table 1, entry 7). Eyring analysis returned barriers of 111 kJ mol^{-1} (*syn*-**3e**) and 114 kJ mol^{-1} (*anti*-**3e**) for the interconversion of the diastereoisomers at this temperature. Likewise, *syn*-**3a** was heated to 110 °C for 18 h. Conversion to *anti*-**3a** reached 22% after this time, suggesting a barrier to

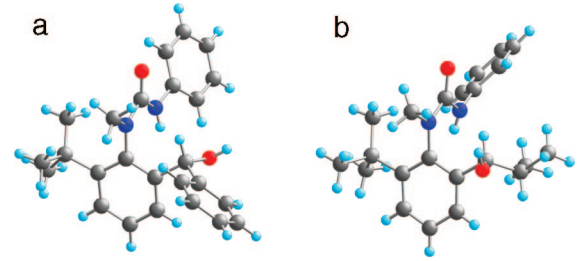

FIGURE 1. X-ray crystal structures of (a) *syn*-**3d** and (b) *anti*-**3c**.

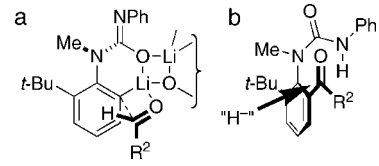

FIGURE 2. Stereoselectivity of (a) addition and (b) reduction.

rotation about the more hindered Ar−N bond possibly as high as 130 kJ mol^{-1}.[9]

The diastereoselectivities of the addition reactions are remarkably high, and resubjecting the products to the conditions of the reaction by treatment with 2 equiv of BuLi showed that the origin of the selectivity was kinetically determined in the C−C bond forming step. We propose a transition state structure approximated in Figure 2a to explain the syn selectivity of these reactions. Aggregation of the lithiated amide in solution means that the approach of the aldehyde takes place syn to the urea methyl group: steric hindrance between R^2 and the methyl group controls the relative diastereofacial selectivity.

Reduction of the ketones **4** with either sodium borohydride or superhydride gave the same pairs of atropisomers, again in favor of the syn diastereoisomer but with poorer diastereoselectivity (Table 1, entries 4 and 5).[10] The syn stereochemistry results from nucleophilic attack on the less hindered face of ketones **4** in the conformation shown in Figure 2b. Atropisomers **3** were finally also made by the addition of excess organometallic nucleophiles to the aldehyde **5**, but only PhMgBr gave a high selectivity.[10]

These results clearly show that unsymmetrical 2,6-disubstituted arylureas have the potential to exhibit atropisomerism and thus reveal a new class of stereogenic axes,[11] which also possess a powerful lithiation directing ability.[4,6] Lateral lithiation (lithiation at a benzylic position ortho to a directing group)[12] is well-known for amides[13,14] and anilides[14,15] but only recently has been reported for ureas.[4] It was possible to generate atropisomeric ureas by using lateral lithiation to desymmetrize the 2,6-diethyl urea **6**. Treatment of **6** with 2.5 equiv of *s*-BuLi

(8) For all four atropisomeric ureas whose X-ray crystal structures are reported in this paper, the angle between the aryl ring and the average plane of the urea is 90 ± 10°. The X-ray crystallographic data for *anti*-**3c**, *syn*-**3d**, **10e** (major diastereoisomer), and **12** can be found in CCDC 629964, 629965, 629966, and 629967, respectively. These data can be obtained free of charge from the Cambridge Crystallographic Data Centre via www.ccdc.cam.ac.uk/data_request/cif.

(9) Decomposition prevented longer epimerization times, but this ratio does not appear to represent the equilibrated ratio of diastereoisomers. A barrier of 130 kJ mol^{-1} would give a half-life of 18 h at 110 °C for epimerization to an equilibrium mixture of atropisomers.

(10) For comparable reactions of lithiated benzamides and naphthamides, see: Clayden, J.; Westlund, N.; Beddoes, R. L.; Helliwell, M. *J. Chem. Soc., Perkin Trans. 1* **2000**, 1351.

(11) We have previously established that ureas bearing a single 2-substituent rotate slowly on the NMR timescale. Atropisomerism appears to arise only in 2,6-disubstituted ureas. Adler, T.; Bonjoch, J.; Clayden, J.; Font-Bardfía, M.; Pickworth, M.; Solans, X.; Solé, D.; Vallverdú, L. *Org. Biomol. Chem.* **2005**, *3*, 3173.

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TABLE 2. Formation of Atropisomers 9 and 10

entry	E^+ (E) =	**9**: yield from **6** (%)	ratio *anti*-**9**:*syn*-**9**	**10**: yield from **7** (%)	ratio *anti*-**10**/*syn*-**10**
1	EtI (Et)	**9a**, 81	>98:2	**10a**, 73	>98:2
2				85[a]	<2:98[a]
3		59[b]	>98:2[b]	61[b]	>98:2[b]
4	Me_3SiCl (Me_3Si)	**9b**, 65	>98:2	**10b**, 62	>98:2
5	$Me_2PhSiCl$ (Me_2PhSi)			**10c**, 62	>98[c]:2
6	Bu_3SnBr	**9d**, 88	90:10	**10d**, 65	>98:2
7	(Bu_3Sn)	72[b]	59:41[d]		>98:2[d]
8			90:10[b]		
9	MeCHO (Me(OH)CH)	**9e**, 74	(14:21)[e] (65[f])	**10e**, 81	(12:7)[e] (40:41[g])
10	PhCHO (Ph(OH)CH)	**9f**, 87	<2 (69:31)[h]	**10f**, 80	<2 (77:23)[h]
11	Acetone ($Me_2(OH)C$)	**9g**, 90	<2:98	**10 g**, 100	<2:98
12	PhCH=NMe (Ph(NHMe)CH)	**9 h**, 78	<2 (68:32)	**10 h**, 74	<2:98
13	Ac_2O (MeCO)			**10i**, 55	<2:98

[a] By lithiation and methylation of **11**. [b] By tin−lithium exchange (from *anti*-**9d** or **10d** for entry 3; from a mixture of *syn*- + *anti*-**9d** for entry 8). [c] Stereospecific oxidation yields *anti*-**3a**. [d] After being heated at 110 °C in toluene for 26 h. [e] Ratios determined by isolating four diastereoisomers: oxidation to a common ketone showed that bracketed pairs differ in stereochemistry at the hydroxyl-bearing center. [f] Inseparable mixture of two diastereoisomers. [g] Stereochemistry proved by X-ray crystal structure. [h] Ratio determined by NMR: only two isomers observed, both giving the same ketone on oxidation.

gave organolithium(s) **8**, which were quenched with electrophiles to yield the atropisomeric products **9** shown in Table 2. Similar results were obtained by treating 2-*t*-butyl urea **7** with *s*-BuLi and electrophiles to yield atropisomers **10**.

Alkylation, silylation, addition to a ketone, and acylation proceeded with excellent diastereoselectivity (Table 2, entries 1, 4, 5, 11, and 13) − in these cases, the minor diastereoisomer was undetectable by NMR.[16] To confirm the existence of a diastereoisomeric compound, and to prove that the stereoselectivity is the result of kinetic control, **11** was made by alkylation of **1** and methylated, yielding the other diastereoisomer of **10**, again with >98:2 diastereoselectivity (entry 2 in Table 2). A slightly lower diastereoselectivity was observed upon stannylation (entry 6 in Table 2), and reaction with aldehydes gave mixtures of diastereoisomers at one (entry 10 in Table 2) or both (entry 9 in Table 2) of the new stereogenic centers. The reaction with an imine (entry 12 in Table 2) was fully diastereoselective when R was *t*-Bu but gave a mixture of diastereoisomers when R was Et.

The stereochemistry of the products could not be determined in every case, but a combination of X-ray crystallography, stereospecific interconversion, and analogy allowed confidence in most assignments. For **9a**, a second lithiation and quench with EtI gave the crystalline symmetrical product **12** (Scheme 2) whose X-ray crystal structure (Figure 3a)[8] indicates the anti stereochemistry for the alkylation products **9a** and **10a**. Anti stereochemistry was assigned to silane **10c** (and, by analogy, **9b** and **10b**) by stereospecific oxidation[17] to the alcohol *anti*-**3a** (Scheme 2). By contrast, the stereochemistry at the new C−C bond in both major diastereoisomers of **10e** (formed by the addition to MeCHO) is syn: both oxidize to the ketone **10i**

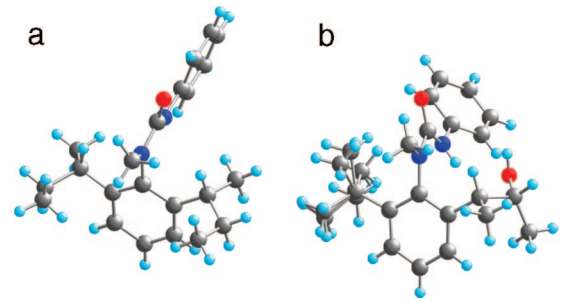
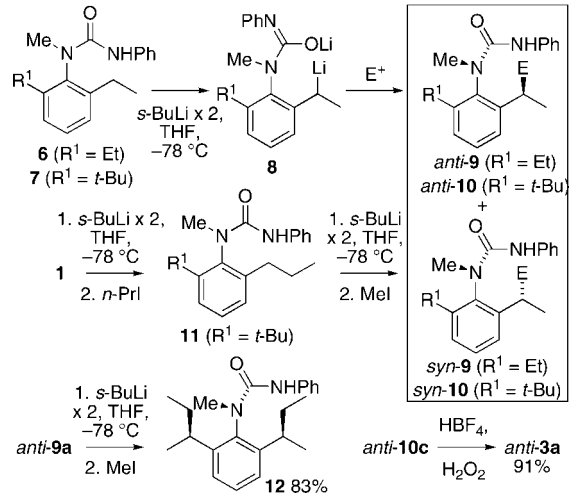


FIGURE 3. X-ray crystal structure of (a) **12** and (b) **10e** (major diastereoisomer). The *t*-butyl group is disordered.

SCHEME 2. Atroposelective Lateral Lithiations of Ureas



produced on acetylation of **8** (entry 13 in Table 2), and the X-ray crystal structure of the major diastereoisomer of **10e** is shown in Figure 3b.[8] We assume syn stereochemistry for the major products of all C=O and C=N additions (entries 9−13 in Table 2).

(16) For comparable reactions of lithiated benzamides and naphthamides, see: Clayden, J.; Pink, J. H.; Westlund, N.; Frampton, C. S. *J. Chem. Soc., Perkin Trans. 1* **2002**, 901.

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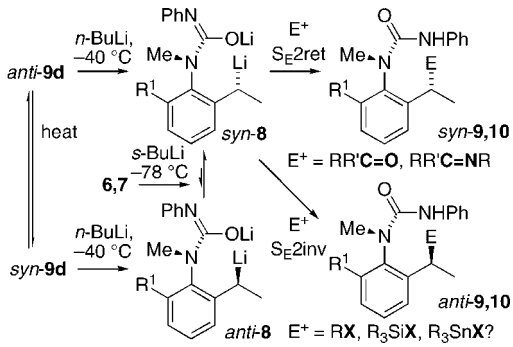
SCHEME 3. Mechanistic Pathways in Diastereoselective Lithiation−Quench Reactions of Laterally Lithiated Ureas



Stereoselective lateral lithiation may proceed by stereoselective metalation (a) under kinetic control (to give a configurationally stable lithio intermediate), (b) under thermodynamic control (to give a configurationally unstable lithio intermediate that equilibrates to a preferred stereochemistry) followed by stereospecific electrophilic quench, or (c) with stereoselectivity controlled solely by the electrophilic quench step. The three mechanisms are known from Beak's investigations of enantioselective RLi•(−)-sparteine chemistry[18] but have diastereoselective equivalents.[19] A few simple experiments established that the reactions of these ureas are probably not of type (a) because the organolithium intermediate **8** appears to be configurationally unstable (at least at −40 °C). First, thermal epimerization of the stannanes **9d** converted the 90:10 product ratio to one of 59:41 (Table 2, entry 7: under the same conditions, the diastereoisomeric ratio of **10d** did not change). Treatment of this mixture with *n*-BuLi at −40 °C generated a new organolithium **8** (Scheme 3), which was quenched with Bu_3SnBr to yield **9d** (entry 8 in Table 2) with the same 90:10 ratio of products formed in the first reaction, or quenched with EtI to yield **9a** again with >98:2 diastereoselectivity. These results suggest that the organolithiums **8** in Schemes 2 and 3 are, despite their different origins, the same, probably because the lithium-bearing stereogenic center is configurationally unstable, as in related lithiated anilides under certain conditions.[14]

A difference in stereochemistry between the products of, on the one hand, alkylation and silylation and on the other hand addition to C=O groups is precedented for stereochemically defined benzylic organolithiums, many of which have been reported to react with alkylating and silylating agents with inversion but with carbonyl compounds with retention.[19,20] We therefore propose that the stereochemistry of **9** and **10** arises from rapid equilibration of **8**, once formed, to a thermodynamically more favorable diastereoisomeric configuration *syn*-**8** (Scheme 3) followed by retentive (for C=O and C=N electrophiles) or invertive (for alkylating and silylating agents) electrophilic substitution. Further investigation of the finer mechanistic details of this reaction is in progress.

In summary, we found that 2,6-disubstituted aryl ureas exhibit atropisomerism and can be made diastereoselectively by reactions of their lithio derivatives, governed by the stereogenic Ar−N axis. We are currently working on ways to synthesize members of this new class of atropisomers in enantiomerically pure forms.

Experimental Procedures

General experimental details are provided in the Supporting Information.

1-(2-Isopropylphenyl)-1-methyl-3-phenylurea (1, R¹ = *i*-Pr). 1-(2-Isopropylphenyl)-3-phenylurea[11] (1.00 g, 3.94 mmol) was dissolved in THF (50 mL) and treated with NaH (0.189 g, 4.72 mmol) and MeI (0.37 mL, 0.838 g, 5.906 mmol) to give a colorless oil purified by flash chromatography to afford the product in 72% yield (0.760 g, 2.84 mmol) as a white solid, mp 68−69 °C; R_f (3:1, petrol/EtOAc) 0.40; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 1654.6 (C=O); δ_H (300 MHz; $CDCl_3$) 1.24 (d, J = 6.9 Hz, 3H, CH(C*H*$_3$)$_2$), 1.27 (J = 6.9 Hz, 3H, CH(C*H*$_3$)$_2$), 3.21 (qn, J = 6.9 Hz, 1H, C*H*(CH$_3$)$_2$), 3.31 (s, 3H, NC*H*$_3$), 6.00 (bs, 1H, N*H*), 7.01 (tt, J = 6.8, 1.7 Hz, 1H, Ar-*H*), 7.23−7.27 (m, 3H, Ar-*H*), 7.29 (dd, J = 8.0, 1.3 Hz, 2H, Ar-*H*), 7.33 (td, J = 7.8, 1.7 Hz, 1H, Ar-*H*), 7.45 (dd, J = 7.9, 1.3 Hz, 1H, Ar-*H*), 7.49 (td, J = 7.9, 1.7 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 24.2 (CH(*C*H$_3$)$_2$), 24.6 (CH(*C*H$_3$)$_2$), 28.1 (*C*H(CH$_3$)$_2$), 37.5 (NCH$_3$), 119.6, 123.3, 128.2, 128.2, 129.1, 129.2 129.8, 139.2, 139.8, 148.1, 155.2 (*C*=O); *m*/*z* (CI) 269 (100%, M + H$^+$); HRMS found [M + H]$^+$ 269.1652. $C_{17}H_{20}N_2O$ requires M + H 269.1648.

1-(2-*t*-Butyl-6-(1-hydroxyethyl)phenyl)-1-methyl-3-phenylurea (3a). 1-(2-*t*-Butylphenyl)-1-methyl-3-phenylurea **1** (R¹ = *t*-Bu)[6] (0.200 g, 0.71 mmol) in anhydrous THF (20 mL) was cooled to −78 °C, and a solution of *s*-BuLi (1.1 M solution in cyclohexane, 1.6 mL, 1.78 mmol, 2.5 equiv) was added dropwise under N_2. The resulting reaction mixture was stirred for 15 min at this temperature to afford a yellow solution. Excess acetaldehyde (0.5 mL) was added, and the mixture was stirred for a further 2 h. The reaction mixture was diluted with diethyl ether (5 mL), and saturated ammonium chloride solution (5 mL) was added. The reaction mixture was left to warm to room temperature. The aqueous layer was extracted with diethyl ether (3 × 10 mL). The organic layers were dried over $MgSO_4$ and concentrated under reduced pressure to give a residue that was purified by flash column chromatography to yield the title compound in 79% yield (0.184 g, 0.56 mmol) as a separable mixture of diastereoisomers. Major diastereoisomer, white solid, mp 164 °C; R_f (1:3 EtOAc/petrol) 0.11; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 3410 (OH), 1651.8 (C=O); δ_H (300 MHz; $CDCl_3$) 1.46 (s, 9H, C(C*H*$_3$)$_3$), 1.54 (d, J = 6.4 Hz, 3H, CHOHC*H*$_3$), 2.24 (bs, 1H, O*H*), 3.20 (s, 3H, NC*H*$_3$), 5.02 (q, J = 6.4 Hz, 1H, C*H*OH), 6.15 (s, 1H, N*H*), 7.02 (dd, J = 8.6, 4.5 Hz, 1H, Ar-*H*), 7.25 (d, J = 4.5 Hz, 4H, Ar-*H*), 7.48 (t, J = 7.6 Hz, 1H, Ar-*H*), 7.61 (td, J = 8.6, 1.7, 2H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 25.7 (CH$_3$), 32.4 (C(*C*H$_3$)$_3$), 36.8 (*C*(CH$_3$)$_3$), 39.4 (NCH$_3$), 64.8 (*C*HOH), 120.3, 123.6, 126.6, 129.1, 129.2, 137.2, 138.9, 146.3, 148.7, 156.0 (*C*=O); *m*/*z* (CI) 327; HRMS found [M + H]$^+$ 327.2064. $C_{20}H_{26}N_2O_2$ requires M + H 327.2067. Minor diastereoisomer, white solid, mp 164 °C; R_f (1:3 EtOAc/petrol) 0.05; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 3415.7 (OH), 1660.0 (C=O); δ_H (300 MHz; $CDCl_3$) 1.47 (s, 9H, C(C*H*$_3$)$_3$), 1.80 (bs, 1H, O*H*), 3.33 (s, 3H, NC*H*$_3$), 5.04 (q, J = 6.4 Hz, 1H, C*H*OHCH$_3$), 5.88 (bs, 1H, N*H*), 7.01−7.08 (m, 1H, Ar-*H*), 7.24−7.31 (m, 4H, Ar-*H*), 7.50 (t, J = 7.6 Hz, 1H, Ar-*H*), 7.62 (td, J = 7.6, 1.6 Hz, 2H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 25.5 (*C*H$_3$), 32.6 (C(*C*H$_3$)$_3$), 36.9 (*C*(CH$_3$)$_3$), 39.2 (NCH$_3$), 65.2 (*C*HOH), 119.9, 123.6, 126.7, 129.3, 129.7, 130.2, 137.0, 138.7, 146.3, 148.7, 155.6 (*C*=O); *m*/*z* (CI) 327 (100%, M$^+$); HRMS found M$^+$ 327.2067 requires $C_{20}H_{27}N_2O_2$ 327.2067.

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1-(2-*t*-Butyl-6-(1-hydroxypropyl)phenyl)-1-methyl-3-phenylurea (3b). In the same way, 1-(2-*t*-Butylphenyl)-1-methyl-3-phenylurea **1** (R^1 = *t*-Bu)[6] (0.200 g, 0.71 mmol), *s*-BuLi (1.1 M solution in cyclohexane, 1.6 mL, 1.78 mmol, 2.5 equiv), and excess propionaldehyde (0.5 mL) were mixed. The title compound was obtained in 89% yield (0.215 g, 0.63 mmol) as a separable mixture of diastereoisomers. Major diastereoisomer, white solid, mp 134 °C; R_f (1:3 EtOAc/petrol) 0.20; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 3411.2 (OH), 1654.3 (C═O); δ_H (300 MHz; $CDCl_3$) 1.05 (t, J = 7.4 Hz, 3H, CH_2CH_3), 1.48 (s, 9H, $C(CH_3)_3$), 1.75−1.95 (m, 2H, CH_2CH_3), 2.40−2.53 (bm, 1H, O*H*), 3.22 (s, 3H, NCH_3), 4.70 (dd, J = 8.1, 5.1 Hz, 1H, C*H*OH), 6.21 (s, 1H, N*H*), 7.04 (dt, J = 5.5, 2.9 Hz, 1H, Ar-*H*), 7.28 (dd, J = 4.9, 1.6 Hz, 4H, Ar-*H*), 7.50 (t, J = 7.8 Hz, 1H, Ar-*H*), 7.58 (dd, J = 7.8, 1.8, 1H, Ar-*H*), 7.63, (dd, J = 7.8, 1.8 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 11.2 (CH_3), 31.9 (CH_2CH_3), 32.3 ($C(CH_3)_3$), 36.7 ($C(CH_3)_3$, 39.9 (NCH_3), 70.3 (*C*HOH), 120.2, 123.5, 126.7, 129.1, 129.3, 129.9, 137.6, 138.8, 145.1, 148.7, 155.9 (*C*═O); *m/z* (CI) 341; HRMS found $[M + H]^+$ 341.2223. $C_{20}H_{28}N_2O_2$ requires M + H 341.2225. Minor diastereoisomer, white solid, mp 134 °C; R_f (1:3 EtOAc/petrol) 0.07; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 3412.0 (OH), 1651.7 (C═O); δ_H (300 MHz; $CDCl_3$) 0.94 (t, J = 7.1 Hz, 3H, CH_2CH_3), 1.47 (s, 9H, $C(CH_3)_3$), 1.82 (dq, J = 19.7, 7.3 Hz, 2H, CH_2CH_3), 2.39 (bs, 1H, O*H*), 3.33 (s, 3H, NCH_3), 4.72 (dd, J = 7.7, 5.5 Hz, 1H, C*H*OH), 5.88 (s, 1H, N*H*), 7.04 (td, J = 6.3, 2.1 Hz, 1H, Ar-*H*), 7.26 (d, J = 7.1 Hz, 4H, Ar-*H*), 7.50 (t, J = 7.8 Hz, 1H, Ar-*H*), 7.58 (dd, J = 7.8, 1.8, 1H, Ar-*H*), 7.63, (dd, J = 7.8, 1.8 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 11.1 (CH_3), 31.4 (CH_2CH_3), 32.5 ($C(CH_3)_3$), 36.9 ($C(CH_3)_3$), 39.2 (NCH_3), 70.4 (*C*HOH), 119.7, 123.5, 126.7, 129.2, 129.7, 129.9, 137.6, 138.6, 144.7, 148.8, 155.6 (*C*═O); *m/z* (CI) 341 (100%, M^+); HRMS found $[M + H]^+$ 341.2223. $C_{20}H_{28}N_2O_2$ requires M + H 341.2215.

1-(2-*t*-Butyl-6-(1-hydroxy-2-methylpropyl)phenyl)-1−-3-phenylurea (3c). In the same way, 1-(2-*t*-Butylphenyl)-1-methyl-3-phenylurea **1** (R^1 = *t*-Bu)[6] (0.200 g, 0.71 mmol), *s*-BuLi (1.1 M solution in cyclohexane, 1.6 mL, 1.78 mmol, 2.5 equiv), and excess isobutyraldehyde (0.5 mL) were mixed. The title compound was obtained in 69% yield (0.173 g, 0.49 mmol) as a separable mixture of diastereoisomers. Major diastereoisomer, white solid, mp 162 °C; R_f (1:3 EtOAc/petrol) 0.23; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 3401.9 (OH), 1650.5 (C═O); δ_H (300 MHz; $CDCl_3$) 0.80 (d, J = 6.8 Hz, 3H, CH_3), 1.19 (d, J = 6.8 Hz, 3H, CH_3),1.48 (s, 9H, $C(CH_3)_3$), 2.15−2.25 (m, 1H, $CH(CH_3)_2$), 3.23 (s, 3H, NCH_3), 4.37 (d, J = 9.0 Hz, 1H, C*H*OH), 6.24 (s, 1H, N*H*), 7.00−7.06 (m, 1H, Ar-*H*), 7.22−7.28 (m, 4H, Ar-*H*), 7.50 (t, J = 7.7 Hz, 1H, Ar-*H*), 7.54 (dd, J = 7.7, 1.9 Hz, 1H, Ar-*H*), 7.64 (dd, J = 7.7, 1.9 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 19.6 (CH_3), 32.5 ($C(CH_3)_3$), 34.6 ($CH(CH_3)_2$), 36.9 ($C(CH_3)_3$), 40.4 (NCH_3), 74.8 (*C*HOH), 120.2, 123.5, 126.8, 129.2, 129.5, 130.0, 138.5, 139.0, 144.3, 149.0, 156.1 (*C*═O); *m/z* (CI) 355; HRMS found M^+ 355.2381. $C_{22}H_{31}N_2O_2$ requires 355.2380. Minor diastereoisomer, white solid, mp 162 °C; R_f (1:3 EtOAc/petrol) 0.07; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 3418.4 (OH), 1661.0 (C═O); δ_H (300 MHz; $CDCl_3$) 0.76 (d, J = 6.8 Hz, 3H, CH_3), 1.16 (d, J = 6.8 Hz, 3H, CH_3),1.48 (s, 9H, $C(CH_3)_3$), 2.15−2.25 (m, 1H, $CH(CH_3)_2$), 3.37 (s, 3H, NCH_3), 4.40 (d, J = 8.9 Hz, 1H, C*H*OH), 5.86 (s, 1H, N*H*), 7.01−7.06 (m, 1H, Ar-*H*), 7.25−7.28 (m, 4H, Ar-*H*), 7.50−7.56 (m, 2H, Ar-*H*), 7.64 (dd, J = 7.5, 2.1 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 19.6 (CH_3), 32.6 ($C(CH_3)_3$), 34.1 ($CH(CH_3)_2$), 36.9 ($C(CH_3)_3$), 39.4 (NCH_3), 75.0 (*C*HOH), 119.3, 123.4, 126.7, 129.3, 130.1, 130.2, 138.5, 139.0, 143.9, 149.0, 156.2 (*C*═O); *m/z* (CI) 355 (100%, M^+); HRMS found M + H^+ 355.2384 $C_{22}H_{31}N_2O_2$ requires M + H 355.2380.

1-(2-*t*-Butyl-6-(hydroxy(phenyl)methyl)phenyl)-1-methyl-3-phenylurea (3d). In the same way, 1-(2-*t*-butylphenyl)-1-methyl-3-phenylurea **1** (R^1 = *t*-Bu)[6] (0.100 g, 0.35 mmol), *s*-BuLi (1.3 M solution in cyclohexane, 0.68 mL, 0.89 mmol, 2.5 equiv), and benzaldehyde (0.09 mL, 0.89 mmol, 2.5 equiv) were mixed. The title compound was obtained in 83% yield (0.113 g, 0.29 mmol) as a separable mixture of diastereoisomers. Major diastereoisomer, white solid, mp 190−191 °C; R_f (1:4 EtOAc/petrol) 0.21; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 3447 (OH), 1732.49 (C═O); δ_H (300 MHz; $CDCl_3$) 1.44 (s, 9H, $C(CH_3)_3$), 2.97 (s, 3H, NCH_3), 3.54 (d, J = 4.4 Hz, 1H, O*H*), 5.88 (d, J = 4.4 Hz, 1H C*H*COH), 6.46 (s, 1H, N*H*), 6.96 (t, J = 7.3 Hz, 1H, Ar-*H*), 7.14 (t, J = 7.3 Hz, 2H, Ar-*H*), 7.22 (d, J = 7.4 Hz, 1H, Ar-*H*), 7.30−7.40 (m, 8H, Ar-*H*) 7.60 (dd, J = 7.6, 2.2 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 32.4 ($C(CH_3)$), 36.77 ($C(CH_3)$, 39.3 (NCH_3), 70.8 (*C*HOH), 120.0, 123.3, 127.2, 128.0, 128.5, 128.8, 129.1, 129.6, 129.8, 138.2, 139.0, 143.7, 144.1, 148.7, 155.8 (*C*═O); *m/z* (CI) 389; HRMS found M + H^+ 389.2227. $C_{25}H_{28}N_2O_2$ requires M + H 389.2224. EA Found C, 77.4; H, 7.4; N, 7.2. $C_{25}H_{28}N_2O_2$ requires C, 77.3; H, 7.3; N, 7.2. Minor diastereoisomer; mp 191−192 °C; R_f (1:4 EtOAc/petrol) 0.07; δ_H (300 MHz; $CDCl_3$) 1.45 (s, 9H, $C(CH_3)_3$), 2.21 (s, 1H, O*H*), 3.42 (s, 3H, NCH_3), 5.88 (bs, 1H, N*H*), 6.00 (s, 1H, C*H*OH), 6.94−6.99 (m, 3H, Ar-*H*), 7.12 (t, J = 7.3 Hz, 1H, Ar-*H*), 7.16 (d, J = 7.3 Hz, 2H, Ar-*H*), 7.22 (t, J = 7.6 Hz, 2H, Ar-*H*), 7.39 (d, J = 7.2 Hz, 2H, Ar-*H*), 7.47 (t, J = 7.9 Hz, 1H, Ar-*H*), 7.62 (dd, J = 8.2, 1.5 Hz, 1H, Ar-*H*), 7.66 (dd, J = 7.7, 1.5 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 32.6 ($C(CH_3)_3$), 37.1 ($C(CH_3)_3$), 39.0 (NCH_3), 72.0 (*C*HOH), 119.5, 123.2, 126.9, 127.0, 127.9, 128.3, 128.9, 129.9, 130.2, 137.4, 138.6, 143.2, 144.3, 149.2, 155.2 (*C*═O); *m/z* (CI) 389 (100%, M^+); HRMS found M + H^+ 389.2226, $C_{25}H_{28}N_2O_2$ requires M + H 389.2224.

1-(2-(1-Hydroxyethyl)-6-isopropylphenyl)-1-methyl-3-phenylurea (3e). General procedure 1 was followed employing 1-(2-isopropylphenyl)-1-methyl-3-phenylurea **1** (R^1 = *i*-Pr)[4] (0.100 g, 0.37 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 1.10 mL, 0.93 mmol, 2.5 equiv), and excess freshly distilled acetaldehyde (1 mL). The title compound was obtained in 95% yield (0.108 g, 0.35 mmol) as a separable mixture of diastereoisomers. Major diastereoisomer, mp 135−137 °C; R_f (1:3 EtOAc/petrol) 0.22; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 3412.1 (OH), 1649.9 (C═O); δ_H (300 MHz; $CDCl_3$) 1.20 (d, J = 6.8 Hz, 3H, $CH(CH_3)_2$), 1.28 (d, J = 6.8 Hz, 3H, $CH(CH_3)_2$), 1.53 (d, J = 6.4 Hz, 3H, $CHOHCH_3$), 2.66 (bs, 1H, O*H*), 3.10 (q, J = 6.8 Hz, 1H, $CH(CH_3)_2$), 3.18 (s, 3H, NCH_3), 5.05 (q, J = 6.4 Hz, 1H, C*H*OH), 6.35 (s, 1H, N*H*), 6.97−7.03 (m, 1H, Ar-*H*), 7.24 (d, J = 4.3 Hz, 4H, Ar-*H*), 7.40 (dd, J = 7.6, 1.8 Hz, 1H, Ar-*H*), 7.50 (t, J = 7.6 Hz, 1H, Ar-*H*), 7.56 (dd, J = 7.6, 1.8 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 24.6, 24.7, 24.8, 28.3 ($CH(CH_3)_2$), 38.3 (NCH_3), 65.2 (*C*HOH), 120.2, 123.4, 125.3, 127.4, 129.2, 130.1, 136.9, 139.2, 144.0, 148.2, 156.0 (*C*═O); *m/z* (CI) 313; HRMS found M + H^+ 313.1909. $C_{19}H_{25}N_2O_2$ requires M + H 313.1911. Minor diastereoisomer, white solid, mp 135−138 °C; R_f (1:3 EtOAc/petrol) 0.09; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 3412.7 (OH), 1649.0 (C═O); δ_H (300 MHz; $CDCl_3$) 1.25 (d, J = 6.8 Hz, 3H, $CH(CH_3)_2$), 1.27 (d, J = 6.8 Hz, 3H, $CH(CH_3)_2$), 1.50 (d, J = 6.4 Hz, 3H, $CHOHCH_3$), 1.78 (bs, 1H, O*H*), 3.13 (q, J = 6.8 Hz, 1H, $CH(CH_3)_2$), 3.31 (s, 3H, NCH_3), 5.11 (q, J = 6.4 Hz, 1H, C*H*OH), 5.92 (s, 1H, N*H*), 7.00−7.04 (m, 1H, Ar-*H*), 7.22−7.28 (m, 4H, Ar-*H*), 7.42 (dd, J = 7.7, 1.7 Hz, 1H, Ar-*H*), 7.52 (t, J = 7.6 Hz, 1H, Ar-*H*), 7.61 (dd, J = 7.7, 1.6 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 24.4, 25.1, 25.5, 28.2 ($CH(CH_3)_2$), 37.1 (NCH_3), 65.8 (*C*HOH), 119.9, 123.6, 125.5, 127.5, 129.3, 130.5, 136.0, 138.8, 144.8, 148.2, 155.3 (*C*═O); *m/z* (CI) 313; HRMS found M + H^+ 313.1908. $C_{19}H_{25}N_2O_2$ requires M + H 313.1911.

1-(2-*t*-Butyl-6-acetylphenyl)-1-methyl-3-phenylurea (4a). General procedure 2 was followed employing **3a** (0.100 g, 0.31 mmol) dissolved in 3 mL of acetone and 0.3 mL of Jones' reagent (prepared by dissolving CrO_3 (2.5 g) in 20% sulfuric acid). The orange mixture was stirred until completion as judged by TLC. The reaction mixture was poured into a saturated $NaHCO_3$ (50 mL) solution and extracted with EtOAc (4 × 20 mL). The combined organic extracts were dried over $MgSO_4$ and concentrated under reduced pressure to afford the ketone **4a** in 100% yield (0.100 g, 0.31 mmol), mp 110 °C; R_f (1:3 EtOAc/petrol) 0.23; IR $\nu_{max}(CHCl_3)/cm^{-1}$ 1697.5 (C═O), 1669.9 (C═O),; δ_H (300 MHz; $CDCl_3$) 1.48 (s, 9H, $C(CH_3)_3$), 2.55 (s, 3H, $COCH_3$), 3.18 (s, 3H, NCH_3), 6.00 (s, 1H, N*H*), 6.99−7.05 (m, 1H, Ar-*H*), 7.25−7.30 (m, 4H, Ar-*H*),

7.48−7.51 (m, 2H, Ar-*H*), 7.79 (dd, J = 5.8, 3.9 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 30.7 (*C*H_3), 32.3 (C(*C*H_3)$_3$), 37.0 (*C*(CH$_3$)$_3$), 39.2 (NCH_3), 120.0, 123.4, 127.4, 129.1, 129.2, 132.7, 136.9, 138.9, 142.0, 150.2, 155.4 (*C*=O), 201.8 (C=O); *m*/*z* (CI) 325; HRMS found M + H$^+$ 325.1911. $C_{20}H_{24}N_2O_2$ requires M + H 325.1911.

1-(2-*t*-Butyl-6-propionylphenyl)-1-methyl-3-phenylurea (4b). In the same way, **3b** (0.100 g, 0.29 mmol) was dissolved in 3 mL of acetone and 0.3 mL of Jones' reagent to afford the ketone in 93% yield (0.093 g, 0.28 mmol), mp 104 °C; R_f (1:3 EtOAc/petrol) 0.28; IR ν_{max}($CHCl_3$)/cm^{-1} 1681 (C=O), 1671 (C=O); δ_H (300 MHz; $CDCl_3$) 1.17 (t, J = 7.2 Hz, 3H, CH$_2$C*H*$_3$), 1.47 (s, 9H, C(C*H*$_3$)$_3$), 2.80−2.92 (m, 2H, C*H*$_2$CH$_3$), 3.16 (s, 3H, NC*H*$_3$), 5.99 (s, 1H, N*H*), 6.90−7.03 (m, 1H, Ar-*H*), 7.20−7.80 (m, 4H, Ar-*H*), 7.40 (d, J = 7.4 Hz, 1H, Ar-*H*), 7.48 (t, J = 7.8, 1H, Ar-*H*), 7.76, (dd, J = 7.8, 1.8 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 8.4 (CH$_3$*C*H$_3$), 32.3 (C(*C*H$_3$)$_3$), 36.4 (*C*H$_2$CH$_3$), 37.0 (*C*(CH$_3$)$_3$), 39.3 (N*C*H$_3$), 119.9, 123.3, 126.9, 129.0, 129.2, 132.3, 136.7, 139.0, 142.4, 150.1, 155.5 (*C*=O), 205.1 (C=O); *m*/*z* (CI) 339; HRMS found M + H$^+$ 339.2071. $C_{21}H_{26}N_2O_2$ requires M + H 339.2067.

1-(2-*t*-Butyl-6-(isobutyryl)phenyl)-1-methyl-3-phenylurea (4c). In the same way, **3c** (0.100 g, 0.28 mmol) was dissolved in 3 mL of acetone and 0.3 mL of Jones' reagent to afford the ketone in 100% yield (0.100 g, 0.28 mmol), mp 88 °C; R_f (1:3 EtOAc/petrol) 0.35; IR ν_{max}($CHCl_3$)/cm^{-1} 1693.1 (C=O), 1687 (C=O); δ_H (300 MHz; $CDCl_3$) 1.19 (d, J = 6.8 Hz, 3H, C*H*$_3$), 1.20 (d, J = 6.8 Hz, 3H, C*H*$_3$), 1.47 (s, 9H, C(C*H*$_3$)$_3$), 3.15 (s, 3H, NC*H*$_3$), 3.22 (sept, J = 6.8 Hz, 1H, C*H*(CH$_3$)$_2$), 5.99 (s, 1H, N*H*), 7.01 (tt, J = 6.7, 1.9 Hz, 1H, Ar-*H*), 7.22−7.30 (m, 4H, Ar-*H*), 7.44 (dd, J = 7.6, 2.1 Hz, 1H, Ar-*H*), 7.49 (t, J = 7.6 Hz, 1H, Ar-*H*), 7.77 (dd, J = 7.7, 2.1 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 18.6 (CH$_3$), 19.7 (*C*H$_3$), 32.3 (C(*C*H$_3$)$_3$), 34.6 (*C*H(CH$_3$)$_2$), 39.2 (NCH$_3$), 40.1 (*C*(CH$_3$)$_3$), 119.8, 123.2, 127.2, 129.1, 132.5, 137.1, 139.0, 141.5, 150.3, 155.5 (*C*=O), 208.4 (C=O); *m*/*z* (CI) 353; HRMS found M + H$^+$ 353.2223. $C_{22}H_{28}N_2O_2$ requires M + H 353.22224.

1-(2-*t*-Butyl-6-benzoylphenyl)-1-methyl-3-phenylurea (4d). In the same way, **3d** (0.100 g, 0.26 mmol) was dissolved in 3 mL of acetone and 0.3 mL of Jones' reagent to afford the ketone in 100% yield (0.100 g, 0.26 mmol), mp 148 °C; R_f (1:3 EtOAc/petrol) 0.26; IR ν_{max}($CHCl_3$)/cm^{-1} 1669.3 (C=O), 1622.6 (C=O); δ_H (300 MHz; $CDCl_3$) 1.50 (s, 9H, C(C*H*$_3$)$_3$), 3.01 (s, 3H, NC*H*$_3$), 6.18 (s, 1H, N*H*), 6.97−7.05 (m, 1H, Ar-*H*), 7.20−7.24 (m, 4H, Ar-*H*), 7.32 (dd, J = 7.4, 1.4 Hz, 1H, Ar-*H*), 7.42 (t, J = 7.8 Hz, 2H, Ar-*H*), 7.51 (t, J = 7.6 Hz, 1H, Ar-*H*), 7.57 (t, J = 7.6 Hz, 1H, Ar-*H*), 7.80−7.87 (m, 3H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 32.2 (C(*C*H$_3$)), 36.9 (*C*(CH$_3$), 39.2 (NCH$_3$), 120.0, 123.1, 127.5, 128.5, 128.8, 128.9, 130.4, 131.8, 134.0, 136.8, 137.7, 139.0, 141.4, 150.3, 155.5 (*C*=O), 196.3 (C=O); *m*/*z* (CI) 387; HRMS found M + H$^+$ 387.2077. $C_{25}H_{26}N_2O_2$ requires M + H 387.2067.

1-(2-*t*-Butyl-6-formylphenyl)-1-methyl-3-phenylurea (5). By the method used for **3a**−**e**, 1-(2-*t*-butylphenyl)-1-methyl-3-phenylurea **1** (R^1 = *t*-Bu)[6] (0.100 g, 0.35 mmol), *s*-BuLi (0.68 mL, 0.88 mmol), and DMF (0.1 mL) gave a crude product that was purified by flash chromatography to yield the aldehyde as a white solid in 66% yield (0.071 g, 0.23 mmol), mp 128 °C; IR ν_{max}($CHCl_3$)/cm^{-1} 1685 (CH=O); δ_H (300 MHz; $CDCl_3$) 1.52 (s, 9H, C(C*H*$_3$)$_3$), 3.37 (s, 3H, NC*H*$_3$), 5.88 (bs, 1H, N*H*), 7.03−7.10 (m, 1H, Ar-*H*), 7.23−7.26 (m, 4H, Ar-*H*), 7.61 (t, J = 7.6 Hz, 1H, Ar-*H*), 7.98 (dd, J = 7.6, 1.8 Hz, 2H, Ar-*H*), 10.18 (s, 1H, C*H*O); δ_C (75 MHz; $CDCl_3$) 32.2 (C(*C*H$_3$)$_3$), 36.9 (*C*(CH$_3$)$_3$), 40.4 (NCH$_3$), 120.2, 123.9, 129.1, 129.5, 130.0, 136.3 (*ArC*-H), 135.5, 135.3, 138.4, 150.1, 155.2 (N*C*=O), 190.2 (*C*=O); *m*/*z* (CI) 311 (100%, M + H$^+$); HRMS found M + H$^+$ 311.1755. $C_{19}H_{22}N_2O_2$ requires M + H 311.1754. EA Found C, 73.3; H, 7.1; N, 8.9. $C_{19}H_{22}N_2O_2$ requires C, 73.5; H, 7.1; N, 9.0.

1-(2,6-Diethylphenyl)-1-methyl-3-phenylurea (6). 2,6-Diethyl aniline (3.32 mL, 20.0 mmol, 1 equiv) was added to a solution of phenyl isocyanate (2.17 mL, 20.0 mmol, 1 equiv) in anhydrous CH_2Cl_2 at room temperature, and the solution was stirred for 3 h. The white precipitate was filtered and washed with cold CH_2Cl_2 and dried under high vacuum to afford 1-(2,6-diethylphenyl)-3-phenylurea in 88% yield (4.708 g, 17.5 mmol) as a white powder; mp 235 °C; R_f (1:3 EtOAc/petrol) 0.19; IR ν_{max}($CHCl_3$)/cm^{-1} 1635.7 (C=O); δ_H (300 MHz; $CDCl_3$) 1.16 (t, J = 7.6 Hz, 6H, CH$_2$C*H*$_3$), 2.62 (q, J = 7.6 Hz, 4H, C*H*$_2$CH$_3$), 6.95 (tt, J = 7.3, 1.0 Hz, 1H, Ar-*H*), 7.10−7.20 (m, 3H, Ar-*H*), 7.27 (t, J = 7.5 Hz, 2H, Ar-*H*), 7.48 (dd, J = 7.5, 1.2 Hz, 2H, Ar-*H*), 7.69 (bs, 1H, N*H*), 8.77 (bs, 1H, N*H*); δ_C (75 MHz; $CDCl_3$) 15.4 (CH$_2$*C*H$_3$), 25.2 (*C*H$_2$CH$_3$), 118.5, 122.0, 126.7, 127.5, 129.4, 134.7, 141.1, 142.7, 154.6 (*C*=O); *m*/*z* (CI) 269 (100%, M + H$^+$); HRMS found M + H$^+$ 269.1648. $C_{17}H_{20}N_2O$ requires M + H 269.1648.

1-(2,6-Diethylphenyl)-3-phenylurea (1.00 g, 5.94 mmol) was treated with NaH (0.285 g, 7.13 mmol) and MeI (0.50 mL, 1.26 g, 8.90 mmol) in 50 mL of anhydrous THF to give a colorless oil purified by flash chromatography to afford the title compound in 72% yield (0.783 g, 4.28 mmol) as a white solid; mp 86 °C; R_f (1:3 EtOAc/petrol) 0.41; IR ν_{max}($CHCl_3$)/cm^{-1} 1679.9 (C=O); δ_H (300 MHz; $CDCl_3$) 1.29 (t, J = 7.5 Hz, 6H, CH$_2$C*H*$_3$), 2.67 (q, J = 7.5 Hz, 4H, C*H*$_2$CH$_3$), 3.27 (s, 3H, NC*H*$_3$), 6.01 (bs, 1H, N*H*), 6.99−7.05 (m, 1H, Ar-*H*), 7.25−7.31 (m, 6H, Ar-*H*), 7.46 (dd, J = 8.5, 6.7 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 15.0 (CH$_2$*C*H$_3$), 24.1 (*C*H$_2$CH$_3$), 36.1 (N*C*H$_3$), 119.6, 123.1, 127.8, 129.1, 129.5, 138.3, 139.1, 143.2, 155.0 (*C*=O); *m*/*z* (CI) 283 (100%, M + H$^+$); HRMS found M + H$^+$ 283.1802. $C_{18}H_{22}N_2O$ requires M + H 283.1805.

1-(2-*t*-Butyl-6-ethylphenyl)-1-methyl-3-phenylurea (7). By the method used for **3a**−**e**, 1-(2-*t*-butylphenyl)-1-methyl-3-phenylurea **1** (R^1 = *t*-Bu)[6] (0.600 g, 2.13 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 3.90 mL, 4.68 mmol, 2.2 equiv), and ethyl iodide (0.20 mL, 2.55 mmol, 2.5 equiv) gave the title compound in 60% yield (396 mg, 1.28 mmol). mp 126−128 °C; R_f (1:3 EtOAc/petrol) 0.45; IR ν_{max}($CHCl_3$)/cm^{-1} 2964.7 (NH), 1664.7 (C=O); δ_H (300 MHz; $CDCl_3$) 1.29 (t, J = 7.6 Hz, 3H, CH$_2$C*H*$_3$), 1.46 (s, 9H, C(C*H*$_3$)$_3$), 2.63 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 3.26 (s, 3H, NC*H*$_3$), 6.00 (bs, 1H, N*H*), 6.99−7.05 (m, 1H, Ar-*H*), 7.26−7.30 (m, 4H, Ar-*H*), 7.32 (dd, J = 8.8, 1.7 Hz, 1H, Ar-*H*), 7.40 (t, J = 7.6 Hz, 1H, Ar-*H*), 7.50 (dd, J = 7.9, 1.8 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 15.1 (CH$_2$*C*H$_3$), 23.7 (*C*H$_2$CH$_3$), 32.5 (C(*C*H$_3$)$_3$), 36.8 (*C*(CH$_3$)$_3$), 38.6 (N*C*H$_3$), 119.7, 123.3, 127.7, 128.4, 129.2, 129.4, 138.4, 139.1, 144.7, 148.9, 155.7 (*C*=O); *m*/*z* (CI) 311 (100%, M + H$^+$); HRMS found M + H$^+$ 311.2124. $C_{20}H_{26}N_2O$ requires M + H 311.2118.

1-(2-Ethyl-6-isopropylphenyl)-1-methyl-3-phenylurea (9a). In the same way, 1-(2,6-diethylphenyl)-1-methyl-3-phenylurea **6** (0.100 g, 0.355 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 1.04 mL, 0.89 mmol, 2.5 equiv), and ethyl iodide (0.07 mL, 0.89 mmol, 2.5 equiv) gave the title compound in 81% yield (0.085 g, 2.87 mmol), mp 79−80 °C; R_f (1:3 EtOAc/petrol) 0.52; IR ν_{max}($CHCl_3$)/cm^{-1} 1681.8 (C=O); δ_H (300 MHz; $CDCl_3$) 0.88 (t, J = 7.4 Hz, 3H, CHCH$_2$C*H*$_3$), 1.20 (d, J = 7.0 Hz, 3H, CHC*H*$_3$), 1.28 (t, J = 7.0 Hz, 3H, CH$_2$C*H*$_3$), 1.65 (qn, J = 7.4 Hz, 2H, CHC*H*$_2$CH$_3$), 2.67 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$) 2.88 (sp, J = 7.6 Hz, 1H, CH$_2$C*H*CH$_3$), 3.26 (s, 3H, NC*H*$_3$), 5.99 (bs, 1H, N*H*), 6.98−7.04 (m, 1H, Ar-*H*), 7.25−7.30 (m, 6H, Ar-*H*), 7.45 (t, J = 7.3 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 12.9 (CHCH$_2$*C*H$_3$), 14.9 (CH$_2$*C*H$_3$), 22.6 (CH*C*H$_3$), 24.3 (*C*H$_2$CH$_3$), 31.5 (CH*C*H$_2$CH$_3$), 35.4 (*C*HCH$_3$), 36.7 (NCH$_3$), 119.6, 123.1, 125.6, 127.6, 129.1, 129.7, 138.1, 139.1, 143.0, 147.3, 155.1 (C=O); *m*/*z* (CI) 311 (100%, M + H$^+$); HRMS found M + H$^+$ 311.2117. $C_{20}H_{26}N_2O$ requires M + H 311.2118.

1-(2-Ethyl-6-(1-(trimethylsilyl)ethyl)phenyl)-1-methyl-3-phenylurea (9b). In the same way, 1-(2,6-diethylphenyl)-1-methyl-3-phenylurea **6** (0.200 g, 0.71 mmol), *s*-BuLi (1.1 M solution in cyclohexane, 1.60 mL, 1.78 mmol, 2.5 equiv), and chlorotrimethylsilane (0.23 mL, 0.193 g, 1.78 mmol) gave the title compound obtained in 65% yield (0.165 g, 0.46 mmol), mp 64 °C; R_f (1:6 EtOAc/petrol) 0.19; IR ν_{max}($CHCl_3$)/cm^{-1} 1675.4 (C=O); δ_H (300 MHz; $CDCl_3$) 0.04 (s, 9H, Si(C*H*$_3$)$_3$), 1.27 (t, J = 7.6 Hz, 3H, CH$_2$C*H*$_3$), 1.32 (d, J = 7.5 Hz, 3H, CHC*H*$_3$), 2.37 (q, J = 7.5 Hz, 1H, C*H*CH$_3$), 2.65 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 3.23 (s, 3H,

NC*H*$_3$), 6.03 (bs, 1H, N*H*), 7.01 (tt, J = 6.2, 2.4 Hz, 1H, Ar-*H*), 7.18 (dd, J = 7.8, 2.2 Hz, 2H, Ar-*H*), 7.26−7.30 (m, 4H, Ar-*H*), 7.36 (t, J = 7.7 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) −2.1 (Si(*C*H$_3$)$_3$), 14.9 (CH$_2$*C*H$_3$), 17.9 (CH*C*H$_3$), 23.1 (*C*HCH$_3$), 24.6 (*C*H$_2$CH$_3$), 36.8 (N*C*H$_3$), 119.5, 123.1, 126.4, 126.9, 129.1, 129.3, 139.1, 146.6, 155.0 (C═O); *m/z* (CI) 355 (100%, M + H$^+$); HRMS found M + H$^+$ 355.2200. $C_{21}H_{30}SiN_2O$ requires M + H 355.2200.

1-(2-(1-(Tributylstannyl)ethyl)-6-ethylphenyl)-1-methyl-3-phenylurea (9d). In the same way, 1-(2,6-diethylphenyl)-1-methyl-3-phenylurea **6** (0.210 g, 0.74 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 1.55 mL, 1.87 mmol, 2.5 equiv), and Bu_3SnBr (0.5 mL, 1.87 mmol, 2.5 equiv) gave a colorless oil purified by column chromatography to afford the title compound as an inseparable mixture of diastereoisomers in 88% yield (0.370 g, 0.65 mmol); R_f (1:9 EtOAc/petrol) 0.28; IR ν_{max}($CHCl_3$)/cm^{-1} 1686.2 (C═O); δ_H (300 MHz; $CDCl_3$) 0.89 (t, J = 7.2 Hz, 9H, CH$_2$CH$_2$CH$_2$C*H*$_3$), 0.96 (t, J = 7.5 Hz, 3H, CH$_2$C*H*$_3$), 1.21−1.44 (m, 18H, CH$_2$ × 9), 1.56 (d, J = 7.6 Hz, 3H, CHC*H*$_3$), 2.63 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 2.78 (q, J = 7.6 Hz, 1H, C*H*CH$_3$), 3.21 (s, 3H, NC*H*$_{3major}$), 3.24 (s, 3H, NC*H*$_{3minor}$), 6.03 (bs, 1H, NH$_{minor}$), 6.08 (bs, 1H, NH$_{major}$), 6.98−7.03 (m, 1H, Ar-*H*), 7.09 (d, J = 7.5 Hz, Ar-*H*), 7.17 (d, J = 8.0 Hz, Ar-*H*), 7.25−7.35 (m, 5H, Ar-*H*); δ_C (75 MHz, $CDCl_3$) 9.7 (CH$_2$CH$_2$CH$_2$CH$_3$), 13.9 (SnCH$_2$), 15.0, 20.2, 21.2, 24.5, 27.7, 29.3, 35.8 (N*C*H$_3$), 119.5, 123.0, 125.4, 126.8, 129.0, 129.4 (Ar-*C*), 135.9, 138.2, 143.2, 148.9, 155.1 (*C*═O); *m/z* (ES$^+$) 597 (60%, M + Na$^+$); HRMS found MNa$^+$ 595.2681. $C_{30}H_{48}N_2OSn$ requires M + Na 595.2681.

1-(2-Ethyl-6-(3-hydroxybutan-2-yl)phenyl)-1-methyl-3-phenylurea (9e). In the same way, 1-(2,6-diethylphenyl)-1-methyl-3-phenylurea **6** (0.150 g, 0.53 mmol), *s*-BuLi (1.1 M solution in cyclohexane, 1.20 mL, 1.33 mmol, 2.5 equiv), and excess freshly distilled acetaldehyde (1 mL) gave the title compound in 64% yield (0.110 g, 0.34 mmol) as a separable mixture of diastereoisomers. Diastereoisomer A R_f (1:3 EtOAc/petrol) 0.25; IR ν_{max}($CHCl_3$)/cm^{-1} 1656.5 (C═O); δ_H (300 MHz; $CDCl_3$) 1.24 (t, J = 7.6 Hz, 3H, CH$_2$C*H*$_3$), 1.26 (d, J = 7.0 Hz, 3H, C*H*$_3$), 1.39 (d, J = 6.1 Hz, 3H, C*H*$_3$), 1.63 (bs, 1H, OH), 2.63 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 3.05 (dd, J = 79.0, 7.0 Hz, 1H, C*H*CH$_3$), 3.21 (s, 3H, NC*H*$_3$), 3.98 (dd, J = 9.0, 6.1 Hz, C*H*OHCH$_3$), 6.96 (tt, J = 7.1, 1.4 Hz, 1H, Ar-*H*), 7.02 (bs, 1H, N*H*), 7.19−7.31 (m, 6H, Ar-*H*), 7.41 (t, J = 7.6 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 14.7 (CH$_2$*C*H$_3$), 19.6 (CH$_3$), 22.7 (CH$_3$), 24.2 (*C*H$_2$CH$_3$), 36.8 (N*C*H$_3$), 41.9 (*C*HCH$_3$), 73.8 (*C*HOH), 119.3, 122.5, 124.8, 127.7, 128.9, 129.3, 139.8, 139.9, 143.4, 144.6, 156.1 (*C*═O); *m/z* (CI) 297 (100%, M + H$^+$); HRMS found M$^+$ 297.1966. $C_{20}H_{26}N_2O$ requires 297.1972. Diastereoisomer B R_f (1:3 EtOAc/petrol) 0.17; IR ν_{max}($CHCl_3$)/cm^{-1} 1662.5 (C═O); δ_H (300 MHz; $CDCl_3$) 1.14 (d, J = 6.4 Hz, 3H, CHC*H*$_3$), 1.26 (t, J = 7.6 Hz, 3H, CH$_2$C*H*$_3$), 1.32 (d, J = 7.0 Hz, 3H, CHC*H*$_3$), 2.19 (bs, 1H, OH), 2.63 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 3.02 (qn, J = 7.0 Hz, 1H, C*H*CH$_3$), 3.16 (s, 3H, NC*H*$_3$), 4.01 (qn, J = 6.4 Hz, C*H*OHCH$_3$), 6.33 (bs, 1H, N*H*), 6.97−7.02 (m, 1H, Ar-*H*), 7.22−7.29 (m, 6H, Ar-*H*), 7.40 (t, J = 7.6 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 14.8 (CH$_2$*C*H$_3$), 18.8 (CH$_3$), 21.8 (CH$_3$), 24.2 (*C*H$_2$CH$_3$), 36.8 (N*C*H$_3$), 41.1 (*C*HCH$_3$), 72.2 (*C*HOH), 119.5, 123.1, 125.4, 126.8, 128.0, 129.1, 138.9, 139.3, 143.3, 144.3, 155.6 (*C*═O); *m/z* (CI) 297 (100%, M + H$^+$); HRMS found M$^+$ 297.1966. $C_{20}H_{26}N_2O$ requires 297.1972. Diastereoisomers C and D (inseparable) R_f (1:3 EtOAc/petrol) 0.06; IR ν_{max}($CHCl_3$)/cm^{-1} 1662.8 (C═O); δ_H (300 MHz; $CDCl_3$) 1.13 (d, J = 6.3 Hz, 3H, C*H*$_3$), 1.17 (d, J = 7.0 Hz, 3H, CH$_3$), 1.27 (t, J = 7.6 Hz, 3H, CH$_2$C*H*$_3$), 1.28 (t, J = 7.6 Hz, 3H, CH$_2$C*H*$_3$), 1.30 (d, J = 6.2 Hz, 3H, C*H*$_3$), 1.33 (d, J = 6.1 Hz, 3H, C*H*$_3$), 1.70 (bs, 1H, OH), 2.66 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 2.67 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 2.94 (qn, J = 6.8 Hz, 1H, C*H*CH$_3$), 2.95 (qn, J = 7.0 Hz, 1H, C*H*CH$_3$), 3.26 (s, 3H, NC*H*$_3$), 3.30 (s, 3H, NC*H*$_3$), 3.86−3.98 (m, 1H, C*H*OHCH$_3$), 5.95 (bs, 1H, N*H*), 6.98−7.05 (m, 1H, Ar-*H*), 7.23−7.45 (m, 7H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 14.6, 15.0 (CH$_2$*C*H$_3$), 18.2, 19.7 (CH$_3$), 21.4, 22.7 (CH$_3$), 24.4, 24.5 (*C*H$_2$CH$_3$), 36.8, 37.1 (N*C*H$_3$), 41.4, 42.3 (*C*HCH$_3$), 72.2, 72.8 (*C*HOH), 119.8, 123.4, 123.4, 125.9, 126.5, 128.3, 128.5, 129.8, 130.0, 138.2, 139.0, 139.1, 139.2, 143.4, 143.6, 144.6, 145.2, 155.2, 155.3 (*C*═O); *m/z* (CI) 297 (100%, M + H$^+$); HRMS found M$^+$ 297.1966. $C_{20}H_{26}N_2O$ requires 297.1972.

1-(2-Ethyl-6-(1-hydroxy-1-phenylpropan-2-yl)phenyl)-1-methyl-3-phenylurea (9f). In the same way, 1-(2,6-diethylphenyl)-1-methyl-3-phenylurea **6** (0.150 g, 0.53 mmol), *s*-BuLi (1.1 M solution in cyclohexane, 1.20 mL, 1.33 mmol, 2.5 equiv), and excess freshly distilled benzaldehyde (1 mL) gave the title compound in 87% yield (0.178 g, 0.46 mmol) as an inseparable mixture of diastereoisomers, mp 178−188 °C; R_f (1:3 EtOAc/petrol) 0.18; IR ν_{max}($CHCl_3$)/cm^{-1} 3414.1 (OH), 1664.2(C═O); δ_H (300 MHz; $CDCl_3$) 0.98 (d, J = 6.8 Hz, 3H, CH$_2$C*H*$_3$), 1.16 (t, J = 7.6 Hz, 3H, CHC*H*$_3$ minor), 1.25 (t, J = 7.6 Hz, 3H, CHCH$_3$ major), 2.48−2.57 (m, 1H, CHC*H*CH$_3$),2.64 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 2.71 (s, 3H, NC*H*$_3$ minor), 3.27 (s, 3H, NC*H*$_3$ major), 4.70 (d, J = 9.2 Hz, CHOH major), 4.81 (d, J = 6.8 Hz, CHOH minor), 5.85 (bs, 1H, N*H* minor), 5.91 (bs, 1H, N*H* major), 6.92−6.97 (m, 1H, Ar-*H*), 7.18−7.47 (m, 12H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 14.6, 15.3, 17.2, 19.6, 24.0, 35.9 (NC*H*$_3$ minor), 36.1 (NC*H*$_3$ major), 41.4 (C*H*CH$_3$), 41.6 (C*H*CH$_3$), 77.6 (C*H*OH), 79.9 (C*H*OH), 119.3, 122.9, 122.9, 125.6, 127.0, 127.1, 127.4, 128.1, 128.1, 128.2, 128.6, 128.8, 129.0, 129.6, 138.0, 138.7, 138.7, 138.8, 142.7, 143.0, 143.2, 143.4, 143.7, 143.9, 154.7 (*C*═O minor), 155.0 (*C*═O major); *m/z* (CI) 389 (100%, M + H$^+$); HRMS found M + H$^+$ 389.2218. $C_{25}H_{28}N_2O_2$ requires M + H 389.2224.

1-(2-Ethyl-6-(3-hydroxy-3-methylbutan-2-yl)phenyl)-1-methyl-3-phenylurea (9g). In the same way, 1-(2,6-diethylphenyl)-1-methyl-3-phenylurea **6** (0.100 g, 0.355 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 0.75 mL, 0.426 mmol, 2.5 equiv), and excess freshly distilled acetone (0.5 mL) gave the title compound in 90% yield (0.105 g, 0.32 mmol), mp 182−188 °C; R_f (1:3 EtOAc/petrol) 0.58; IR ν_{max}($CHCl_3$)/cm^{-1} 3414.5 (OH), 1658.7 (C═O); δ_H (300 MHz; $CDCl_3$) 1.25 (t, J = 7.6 Hz, 3H, CH$_2$C*H*$_3$), 1.31 (d, J = 3.9 Hz, 3H, CHC*H*$_3$), 1.35 (s, 6H, COH(C*H*$_3$)$_2$), 2.61 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 3.14 (s, 3H, NC*H*$_3$), 3.20 (q, J = 3.9 Hz, 1H, C*H*CH$_3$), 6.94−7.02 (m, 1H, Ar-*H*), 7.22 (d, J = *4.3* Hz, 4H, Ar-*H*), 7.30 (dd, J = 7.6, 1.5 Hz, 1H, Ar-*H*), 7.38 (t, J = 7.7 Hz, 1H, Ar-*H*), 7.52 (dd, J = 7.8, 1.6 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 13.8 (CH*C*H$_3$), 17.2 (CH$_2$*C*H$_3$), 23.7 (*C*H$_2$CH$_3$) 25.4 (COH*C*H$_3$), 29.5 (COH*C*H$_3$), 36.3 (N*C*H$_3$), 43.6 (*C*HCH$_3$), 73.1 (*C*OH(CH$_3$)$_2$), 119.7, 122.6, 126.9, 127.5, 128.3, 128.5, 139.5, 139.7, 142.3, 143.7, 157.5 (C═O); *m/z* (CI) 341 (100%, M + H$^+$); HRMS found M + H$^+$ 341.2226. $C_{21}H_{28}N_2O_2$ requires M + H 341.2224.

1-(2-Ethyl-6-(1-(methylamino)-1-phenylpropan-2-yl)phenyl)-1-methyl-3-phenylurea (9h). In the same way, 1-(2,6-diethylphenyl)-1-methyl-3-phenylurea **6** (0.150 g, 0.53 mmol), *s*-BuLi (1.1 M solution in cyclohexane, 1.20 mL, 1.33 mmol, 2.5 equiv), and excess *N*-benzylidenemethylamine (0.2 mL) gave the title compound in 78% yield (0.166 g, 0.41 mmol) as a separable mixture of diastereoisomers. Minor diastereoisomer, pale yellow oil; R_f (1:3 EtOAc/petrol) 0.15; IR ν_{max}($CHCl_3$)/ cm^{-1} 3413.8 (NH), 1674.8 (C═O); δ_H (300 MHz; $CDCl_3$) 1.03 (d, J = 8 Hz, 3H, CHC*H*$_3$), 1.23 (t, J = 7.6 Hz, 3H, CH$_2$C*H*$_3$), 2.00 (s, 3H, NHC*H*$_3$), 2.63 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 3.15 (s, 3H, NCH$_3$), 3.32−3.36 (m, 1H, CHC*H*CH$_3$), 3.54 (d, J = 10 Hz, 1H, C*H*CHCH$_3$), 6.91−6.95 (m, 1H, Ar-*H*), 7.18−7.41 (m, 12H, Ar-*H* and N*H*), 8.16 (bs, 1H, N*H*); δ_C (75 MHz; $CDCl_3$) 14.8, 20.3, 24.2, 35.2, 37.2, 41.6, 72.7, 119.6, 122.6, 124.7, 127.9, 128.0, 128.4, 129.1, 129.1, 129.4, 140.6, 141.0, 142.5, 143.7, 144.5, 156.8 (*C*═O); *m/z* (CI) 402 (100%, M + H$^+$) HRMS found M + H$^+$ 402.2541. $C_{26}H_{31}N_3O$ requires M + H 402.2540. Major diastereoisomer, pale yellow oil; R_f (1:3 EtOAc/petrol) 0.10; IR ν_{max}($CHCl_3$)/cm^{-1} 3413.4 (NH), 1675.8 (C═O); δ_H (300 MHz; $CDCl_3$) 1.18 (t, J = 7.6 Hz, 3H, CH$_2$C*H*$_3$), 1.30 (d, J = 7.2 Hz, 3H, CHC*H*$_3$), 2.16 (s, 3H, NHC*H*$_3$), 2.50−2.57 (q, J = 7.6 Hz, 2H, C*H*$_2$CH$_3$), 3.19 (s, 3H, NCH$_3$), 3.37−3.43 (m, 1H, CHC*H*CH$_3$), 3.77 (d, J = 6 Hz, 1H, C*H*CHCH$_3$), 6.36 (bs, 1H, N*H*), 6.88−6.95 (m, 2H, Ar-*H*), 7.03−7.22 (m, 12H, Ar-*H* and N*H*); δ_C (75 MHz; $CDCl_3$) 14.7, 19.2, 24.0, 35.3, 37.0, 40.1, 70.5,

119.4, 122.8, 127.5, 127.7, 127.9, 128.4, 128.5, 129.0, 139.6, 139.7, 141.4, 143.0, 143.4, 156.1 (*C*═O); *m/z* (CI) 402 (100%, M + H$^+$). HRMS found M + H$^+$ 402.2540. $C_{26}H_{31}N_3O$ requires M + H 402.2540.

1-(2-*t*-Butyl-6-*s*-butylphenyl)-1-methyl-3-phenylurea (10a). In the same way, 1-(2-*t*-butyl-6-ethylphenyl)-1-methyl-3-phenylurea **7** (0.080 g, 0.28 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 0.58 mL, 0.71 mmol, 2.5 equiv), and excess ethyl iodide (0.5 mL) gave the title compound as a white solid in 73% yield (0.064 g, 0.21 mmol) as a single diastereoisomer, mp 102 °C; R_f (1:3 EtOAc/petrol) 0.50; IR ν_{max}($CHCl_3$)/cm^{-1} 1681.6 (C═O); δ_H (300 MHz; $CDCl_3$) 0.93 (t, *J* = 7.6 Hz, 3H, CH_2CH_3), 1.19 (d, *J* = 6.7 Hz, 3H, $CHCH_3$), 1.47 (s, 9H, $C(CH_3)_3$), 1.63 (quintet, *J* = 7.3 Hz, 2H, CH_2CH_3), 2.76 (sextet, *J* = 7.0 Hz, 1H $CHCH_3$), 3.24 (s, 3H, NCH_3), 6.00 (bs, 1H, N*H*), 6.99−7.04 (m, 1H, Ar-*H*), 7.25−7.31 (m, 5H, Ar-*H*), 7.40 (t, *J* = 7.9 Hz, 1H, Ar-*H*), 7.49 (dd, *J* = 7.9, 1.8 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 12.9 (CH_3CH_2), 22.2 (CH_3CH_2), 32.1 ($CHCH_3$), 32.4 ($C(CH_3)_3$, 35.0 ($CHCH_3$), 36.7 ($C(CH_3)_3$, 39.3 (NCH_3), 119.6, 123.2, 126.5, 127.4, 129.1, 129.6, 137.8, 138.9, 148.6, 149.1, 155.8 (*C*═O); *m/z* (CI) 339 (100%, M + H$^+$); HRMS found M + H$^+$ 339.2430. $C_{22}H_{30}N_2O$ requires M + H 339.2431.

1-(2-*t*-Butyl-6-*s*-butylphenyl)-1-methyl-3-phenylurea (10a). In the same way, 1-(2-*t*-butyl-6-propylphenyl)-1-methyl-3-phenylurea **11** (0.070 g, 0.22 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 0.44 mL, 0.54 mmol, 2.5 equiv), and methyl iodide (0.03 mL, 2.5 equiv) gave the title compound as a white solid in 85% yield (0.063 g, 0.19 mmol) as a single diastereoisomer, mp 102−104 °C; R_f (1:3 EtOAc/petrol) 0.50; IR ν_{max}($CHCl_3$)/cm^{-1} 1681.0 (C═O); δ_H (300 MHz; $CDCl_3$) 0.80 (t, *J* = 7.3 Hz, 3H, CH_2CH_3), 1.22 (d, *J* = 6.7 Hz, 3H, $CHCH_3$), 1.43 (s, 9H, ($C(CH_3)_3$), 1.62 (quintet, *J* = 7.6 Hz, 2H, $CHCH_2CH_3$), 2.79 (q, *J* = 7.0 Hz, 1H, $CHCH_3$), 3.23 (s, 3H, NCH_3), 5.96 (bs, 1H, N*H*), 6.98−7.03 (m, 1H, Ar-*H*), 7.24−7.29 (m, 5H, Ar-*H*), 7.41 (t, *J* = 7.9 Hz, 1H, Ar-*H*), 7.48 (dd, *J* = 8.2, 1.5 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 13.1 (CH_3CH_2), 23.5 (CH_3CH_2), 31.2 ($CHCH_3$), 32.5 ($C(CH_3)_3$, 35.2 ($CHCH_3$), 36.8 ($C(CH_3)_3$, 39.2 (NCH_3), 119.3, 123.1, 126.3, 127.5, 129.1, 129.5, 137.9, 138.9, 148.7, 148.9, 155.6 (*C*═O); *m/z* (CI) 339 (100%, M + H$^+$); HRMS found M + H$^+$ 339.2435. $C_{22}H_{30}N_2O$ requires M + H 339.2431.

1-(2-*t*-Butyl-6-(1(trimethylsilyl)ethyl)phenyl)-1-methyl-3-phenylurea (10b). In the same way, 1-(2-*t*-butyl-6-ethylphenyl)-1-methyl-3-phenylurea **7** (0.100 g, 0.35 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 0.74 mL, 0.89 mmol, 2.5 equiv), and chlorotrimethylsilane (0.11 mL, 2.5 equiv) gave the title compound as a pale yellow oil in 62% yield (0.083 g, 0.22 mmol) as a single diastereoisomer; R_f (1:3 EtOAc/petrol) 0.55; IR ν_{max}($CHCl_3$)/cm^{-1} 1681.7 (C═O); δ_H (300 MHz; $CDCl_3$) 0.06 (s, 9H, $Si(CH_3)_3$), 1.31 (d, *J* = 7.3 Hz, 3H, $CHCH_3$), 1.45 (s, 9H, ($C(CH_3)_3$), 2.26 (q, *J* = 7.3 Hz, 1H, $CHCH_3$), 3.20 (s, 3H, NCH_3), 6.02 (bs, 1H, N*H*), 6.98−7.04 (m, 1H, Ar-*H*), 7.19−7.30 (m, 5H, Ar-*H*), 7.35 (t, *J* = 7.9 Hz, 1H, Ar-*H*), 7.41 (dd, *J* = 8.2, 1.5 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) −1.93 ($Si(CH_3)_3$, 18.2 (CH_3CH), 22.7 (CH_3CH), 32.4 ($C(CH_3)_3$, 36.7 ($C(CH_3)_3$, 39.6 (NCH_3), 119.6, 123.2 126.2, 127.6, 129.1, 129.2, 137.5, 138.9, 148.3, 149.0, 155.8 (*C*═O); *m/z* (CI) 383 (100%, M + H$^+$); HRMS found M + H$^+$ 383.2509. $C_{23}H_{34}N_2OSi$ requires M + H 383.2513.

1-(2-*t*-Butyl-6-(1-dimethyl(phenyl)silyl)ethyl)phenyl)-1-methyl-3-phenylurea (10c). In the same way, 1-(2-*t*-butyl-6-ethylphenyl)-1-methyl-3-phenylurea **7** (0.200 g, 0.65 mmol), *s*-BuLi (2.1 M solution in cyclohexane, 0.77 mL, 1.61 mmol, 2.5 equiv), and chloro(dimethyl)phenylsilane (0.27 mL, 2.5 equiv) gave the title compound as a pale yellow oil in 62% yield (0.083 g, 0.22 mmol) as a single diastereoisomer; R_f (1:3 EtOAc/petrol) 0.47; IR ν_{max}($CHCl_3$)/cm^{-1} 1678.3 (C═O), 1247.4 (Si−C); δ_H (300 MHz; $CDCl_3$) 0.34 (s, 3H, $SiCH_3$), 0.43 (s, 3H, $SiCH_3$), 1.40 (s, 9H, tBu), 2.43 (q, *J* = 7.4 Hz, 1H, $SiCHCH_3$), 2.83 (s, 3H, NCH_3), 5.95 (bs, 1H, N*H*), 6.98−7.03 (m, 1H, Ar-*H*), 7.20 (dd, *J* = 7.6, 1.7 Hz, 1H, Ar-*H*), 7.24 (d, *J* = 4.5 Hz, 4H, Ar-*H*), 7.30−7.39 (m, 7H, Ar-*H*), 7.44 (dd, *J* = 8.0, 1.7 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) −4.2 ($SiCH_3$), −3.3 ($SiCH_3$), 18.2 (CH_3CHSi), 23.0 (CH_3CHSi), 32.3 ($C(CH_3)_3$), 36.1 ($C(CH_3)_3$), 38.9 (NCH_3), 119.6, 123.2, 126.3, 127.8, 128.0, 129.1, 129.5, 133.3, 134.4, 137.4 (4°Ar-*C*), 137.5 (4°Ar-*C*), 138.8 (4°Ar-*C*), 147.6 (4°Ar-*C*), 149.2 (4°Ar-*C*), 155.7 (*C*═O); *m/z* (CI) 445 (100%, M + H$^+$); HRMS found M + H 445.2660 $C_{28}H_{36}N_2OSi$ requires M + H 445.2670.

1-(2-*t*-Butyl-6-(1-(tributylstannyl)ethyl)phenyl)-1-methyl-3-phenylurea (10d). In the same way, 1-(2-*t*-butyl-6-ethylphenyl)-1-methyl-3-phenylurea **7** (0.250 g, 1.08 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 2.24 mL, 2.69 mmol, 2.5 equiv), and tributyltin bromide (0.73 mL, 2.5 equiv) gave the title compound as a colorless oil in 65% yield (0.351 g, 0.70 mmol); R_f (1:8 EtOAc/petrol) 0.50; IR ν_{max}($CHCl_3$)/cm^{-1} 1685.2 (C═O); δ_H (300 MHz; $CDCl_3$) 0.83−0.92 (m, 15H, $Sn(CH_2CH_2CH_2CH_3)_3$), 1.25−1.38 (m, 12H, $Sn(CH_2CH_2CH_2CH_3)_3$), 1.44 (s, 9H, $C(CH_3)_3$), 1.55 (d, *J* = 9.0 Hz, 3H, CH_3CH), 2.68 (q, *J* = 9.0 Hz, 1H, CH_3CH), 3.20 (s, 3H, NCH_3), 6.06 (s, 1H, N*H*), 7.00−7.04 (m, 1H, Ar-*H*), 7.20−7.33 (m, 7H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 9.8, 13.9, 20.4, 21.4, 27.7, 29.2, 32.3 ($C(CH_3)_3$), 36.6 ($C(CH_3)_3$), 38.2 (NCH_3), 119.7, 123.1, 125.0, 127.6, 129.0, 129.2, 135.9, 138.9, 149.0, 150.5, 156.0 (*C*═O); *m/z* (CI) 601; HRMS found M + H$^+$ 601.3174. $C_{32}H_{52}N_2OSn$ requires M + H 601.3174.

1-(2-*t*-Butyl-6-(3-hydroxybutan-2-yl)phenyl)-1-methyl-3-phenylurea (10e). In the same way, 1-(2-*t*-butyl-6-ethylphenyl)-1-methyl-3-phenylurea **7** (0.100 g, 0.32 mmol), *s*-BuLi (1.1 M solution in cyclohexane, 0.70 mL, 0.806 mmol, 2.5 equiv), and excess freshly distilled acetaldehyde (1 mL) gave the title compound in 94% yield (0.106 g, 0.30 mmol) as a separable mixture of diastereoisomers. Diastereoisomer A R_f (1:3 EtOAc/petrol) 0.12, mp 138−142 °C; IR ν_{max}($CHCl_3$)/cm^{-1} 3413.5 (OH), 1660.0 (C═O); δ_H (300 MHz; $CDCl_3$) 1.14 (d, *J* = 6.9 Hz, 3H, $CHOHCH_3$), 1.33 (d, *J* = 6.1 Hz, 3H, $CHCH_3$), 1.45 (s, 9H, $C(CH_3)_3$), 1.63 (bs, 1H, OH), 2.84 (dq, *J* = 9.0, 6.9 Hz, 1H, $CHCH_3$), 3.28 (s, 3H, NCH_3), 3.92 (dq, *J* = 9.0, 6.1 Hz, 1H, $CHOHCH_3$), 5.91 (bs, 1H, N*H*), 6.99 (tt, *J* = 6.5, 2.0 Hz, 1H, Ar-*H*), 7.21−7.26 (m, 4H, Ar-*H*), 7.36 (dd, *J* = 7.7, 1.6 Hz, 1H, Ar-*H*), 7.44 (t, *J* = 7.9 Hz, 1H, Ar-*H*), 7.54 (dd, *J* = 8.1, 1.6 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 19.8 ($CHCH_3$), 21.6 ($CHOHCH_3$), 32.4 ($C(CH_3)_3$), 36.8 ($C(CH_3)_3$), 39.6 (NCH_3), 41.9 ($CHCH_3$), 73.0 (*C*HOH), 119.6, 123.3, 126.3, 128.3, 129.1, 129.8, 138.8, 139.1, 146.1, 149.2, 155.7 (*C*═O); *m/z* (CI) 355 (100%, M + H$^+$). Diastereoisomer B R_f (1:3 EtOAc/petrol) 0.12, mp 142−148 °C; IR ν_{max}($CHCl_3$)/cm^{-1} 3411.5 (OH), 1651.0 (C═O); δ_H (300 MHz; $CDCl_3$) 1.25 (d, *J* = 6.9 Hz, 3H, $CHOHCH_3$), 1.37 (d, *J* = 6.1 Hz, 3H, $CHCH_3$), 1.44 (s, 9H, $C(CH_3)_3$), 1.63 (bs, 1H, OH), 2.89 (dq, *J* = 9.6, 6.9 Hz, 1H, $CHCH_3$), 3.24 (s, 3H, NCH_3), 4.02 (dq, *J* = 9.6, 6.1 Hz, 1H, $CHOHCH_3$), 6.82 (bs, 1H, N*H*), 6.98 (tt, *J* = 7.2, 1.3 Hz, 1H, Ar-*H*), 7.20−7.35 (m, 4H, Ar-*H*), 7.43 (t, *J* = 7.6 Hz, 2H, Ar-*H*), 7.51 (dd, *J* = 7.9, 1.7 Hz, 1H, Ar-*H;* δ_C (75 MHz; $CDCl_3$) 20.4 ($CHCH_3$), 22.6 ($CHOHCH_3$), 32.4 ($C(CH_3)_3$), 36.8 ($C(CH_3)_3$), 39.2 (NCH_3), 42.0 ($CHCH_3$), 73.5 (*C*HOH), 119.4, 122.6, 125.6, 127.9, 128.9, 129.3, 139.1, 139.6, 146.0, 149.1, 156.0 (*C*═O); *m/z* (CI) 355 (100%, M + H$^+$). Diastereoisomer C R_f (1:3 EtOAc/petrol) 0.04, mp 143−146 °C; IR ν_{max}($CHCl_3$)/cm^{-1} 3418.3 (OH), 1658.3 (C═O); δ_H (300 MHz; $CDCl_3$) 1.10 (d, *J* = 6.3 Hz, 3H, $CHOHCH_3$), 1.35 (d, *J* = 6.9 Hz, 3H, $CHCH_3$), 1.46 (s, 9H, $C(CH_3)_3$), 1.65 (bs, 1H, OH), 2.83 (qn, *J* = 6.8 Hz, 1H, $CHCH_3$), 3.24 (s, 3H, NCH_3), 3.97 (qn, *J* = 6.3 Hz, 1H, $CHOHCH_3$), 6.00 (bs, 1H, N*H*), 6.98−7.06 (m, 1H, Ar-*H*), 7.25−7.26 (m, 4H, Ar-*H*), 7.36−7.44 (m, 2H, Ar-*H*), 7.55 (dd, *J* = 7.6, 2.2 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 18.9 ($CHCH_3$), 22.9 ($CHOHCH_3$), 32.3 ($C(CH_3)_3$), 32.5 ($C(CH_3)_3$), 39.0 (NCH_3), 40.9 ($CHCH_3$), 72.8 (*C*HOH), 119.2, 123.2, 127.2, 128.2, 129.1, 130.0 137.7, 138.7, 146.8, 148.9, 155.4 (*C*═O); *m/z* (CI) 355 (100%, M + H$^+$). Diastereoisomer D R_f (1:3 EtOAc/petrol) 0.02, mp 120−135 °C; IR ν_{max}($CHCl_3$)/cm^{-1} 3416.6 (OH), 1661.2 (C═O); δ_H (300 MHz; $CDCl_3$) 1.20 (d, *J* = 6.3 Hz, 3H, $CHOHCH_3$), 1.28 (d, *J* = 6.9 Hz, 3H, $CHCH_3$), 1.46 (s, 9H, $C(CH_3)_3$), 1.70 (bs, 1H, OH), 2.85 (qn,

J = 6.9 Hz, 1H, C*H*CH$_3$), 3.25 (s, 3H, NC*H*$_3$), 3.94 (qn, J = 6.3 Hz, 1H, C*H*OHCH$_3$), 5.94 (bs, 1H, N*H*), 7.00−7.06 (m, 1H, Ar-*H*), 7.26 (d, J = 4.2 Hz, 4H, Ar-*H*), 7.38−7.45 (m, 2H, Ar-*H*), 7.54 (dd, J = 7.3, 2.4 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 17.3 (CH*C*H$_3$), 22.5 (CHOH*C*H$_3$), 32.4 (*C*(CH$_3$)$_3$), 36.8 (C(*C*H$_3$)$_3$), 39.8 (N*C*H$_3$), 40.4 (*C*HCH$_3$), 72.1 (*C*HOH), 119.7, 123.4, 127.3, 128.0, 129.1, 129.6, 137.9, 138.7, 146.7, 149.1, 155.6 (*C*=O); m/z (CI) 355 (100%, M + H$^+$); HRMS found M + H$^+$ 355.2386. $C_{22}H_{30}N_2O_2$ requires M + H 355.2380.

1-(2-*t*-Butyl-6-(1-hydroxy-1-phenylpropan-2yl)phenyl)-1-methyl-3-phenylurea (10f). In the same way, 1-(2-*t*-butyl-6-ethylphenyl)-1-methyl-3-phenylurea **7** (0.200 g, 0.62 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 1.30 mL, 1.54 mmol, 2.5 equiv), and excess benzaldehyde (0.3 mL) gave the title compound as a colorless oil in 94% yield (0.243 g, 0.58 mmol) as an inseparable mixture of diastereoisomers; R_f (1:3 EtOAc/petrol) 0.19; IR ν_{max}($CHCl_3$)/cm^{-1} 3415.5 (OH), 1664.9 (C=O); δ_H (300 MHz; $CDCl_3$) 0.98 (d, J = 6.9 Hz, 3H, CHC*H*$_{3major}$), 1.30 (d, J = 6.9 Hz, 3H, CHC*H*$_{3minor}$), 1.40 (s, 9H, C(CH$_3$)$_{3minor}$), 1.49 (s, 9H, C(CH$_3$)$_{3major}$), 1.88 (bs, 1H, O*H*), 2.15 (bs, 1H, OH), 2.84 (s, 3H, NCH$_{3minor}$), 3.16−3.29 (m, 2 × 1H, CHOHC*H*CH$_3$), 3.40 (s, 3H, NCH$_{3major}$), 4.75 (d, J = 9.6 Hz, 1H, CH$_3$C*H*OH$_{major}$), 4.93 (d, J = 6.1 Hz, 1H, CH$_3$C*H*OH$_{minor}$), 5.87 (bs, 1H, N*H*$_{minor}$), 5.93 (bs, 1H, N*H*$_{major}$), 6.96−7.03 (m, 1H, Ar-*H*), 7.22−7.30 (m, 5H, 7.35−7.65, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 20.0 (*C*H$_3$CH), 32.4 (C(*C*H$_3$)$_3$, 36.9 (*C*(CH$_3$)$_3$, 39.3 (N*C*H$_3$), 41.4 (*C*HCH$_3$), 80.5 (*C*HOH), 119.6, 123.2 126.3, 127.4, 128.3, 128.5, 128.9, 129.1, 129.7, 138.7, 139.0, 142.8, 145.8, 149.2, 155.6 (*C*=O); m/z (CI) 417 (100%, M + H$^+$); HRMS found M + H$^+$ 417.2536. $C_{27}H_{32}N_2O_2$ requires M + H 417.2537.

1-(2-*t*-Butyl-6-(3-hydroxy-3-methylbutan-2-yl)phenyl)-1-methyl-3-phenylurea (10g). In the same way, 1-(2-*t*-butyl-6-ethylphenyl)-1-methyl-3-phenylurea 7 (0.100 g, 0.32 mmol), *s*-BuLi (1.3 M solution in cyclohexane, 0.62 mL, 0.806 mmol, 2.5 equiv), and excess freshly distilled acetone (1 mL) gave the title compound as a white solid in 100% yield (0.117 g, 0.32 mmol) as a single diastereoisomer, mp 156−160 °C; R_f (1:3 EtOAc/petrol) 0.19; IR ν_{max}($CHCl_3$)/cm^{-1} 3416.0 (OH), 1659.2 (C=O); δ_H (300 MHz; $CDCl_3$) 1.21 (s, 3H, C*H*$_3$), 1.35 (d, J = 7.3 Hz, 3H, CHC*H*$_3$), 1.39 (s, 3H, C*H*$_3$), 1.44 (s, 9H, C(C*H*$_3$)$_3$), 1.73 (bs, 1H, OH), 3.02 (q, J = 7.1 Hz, 1H, C*H*CH$_3$), 3.21 (s, 3H, NC*H*$_3$), 6.59 (bs, 1H, N*H*), 6.98 (tt, J = 7.1, 1.2 Hz, 1H, Ar-*H*), 7.20−7.31 (m, 4H, Ar-*H*), 7.38 (t, J = 7.9 Hz, 1H, Ar-*H*), 7.70 (dd, J = 8.2, 1.5 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 19.2 (CH*C*H$_3$), 28.5 (*C*H$_3$), 30.7 (*C*H$_3$), 32.6 (C(*C*H$_3$)$_3$), 37.0 (*C*(CH$_3$)$_3$), 39.1 (N*C*H$_3$), 43.0 (*C*HCH$_3$), 74.1 (*C*HOH), 119.1, 122.8, 127.5, 128.3, 129.0, 138.5, 139.2, 146.0, 148.7, 155.6 *C*=O; m/z (CI) 369 (100%, M + H$^+$); HRMS found M + H$^+$ 369.2536. $C_{23}H_{32}N_2O_2$ requires M + H 369.2537.

1-(2-*t*-Butyl-6-(1-(methylamino)-1-phenylpropan-2-yl)phenyl)-1-methyl-3-phenylurea (10h). In the same way, 1-(2-*t*-butyl-6-ethylphenyl)-1-methyl-3-phenylurea **7** (0.100 g, 0.32 mmol), *s*-BuLi (1.3 M solution in cyclohexane, 0.62 mL, 0.806 mmol, 2.5 equiv), and excess *N*-benzylidenemethylamine (0.2 mL) gave the title compound as a white solid in 74% yield (0.318 g, 0.32 mmol) as a single diastereoisomer, mp 91−99 °C; R_f (1:0 EtOAc/petrol) 0.43; IR ν_{max}($CHCl_3$)/cm^{-1} 3417.4 (NHRMe), 1679.7 (C=O); δ_H (300 MHz; $CDCl_3$) 0.92 (d, J = 6.8 Hz, 3H, CHC*H*$_3$), 1.48 (s, 9H, tBu), 2.05 (s, 3H, NHC*H*$_3$), 3.05−3.15 (m, 1H, CHC*H*CH$_3$), 3.47 (s, 3H, NC*H*$_3$), 3.59 (d, J = 9.9 Hz, 1H, C*H*CHCH$_3$), 5.88 (bs, 1H, NH), 6.92−6.98 (m, 1H, Ar-*H*), 7.19 (d, J = 4.3 Hz, 4H, Ar-*H*), 7.28−7.49 (m, 7H, Ar-*H*), 7.58 (dd, J = 7.2, 2.4 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 21.2 (CH*C*H$_3$), 32.7 (C(*C*H$_3$), 35.5, 37.1, 39.9 (NCH$_3$), 41.0, 72.9, 119.8, 123.4, 126.3, 127.9, 128.6, 128.8, 128.9, 129.2, 130.1, 138.9, 139.1, 142.5, 146.5, 149.5, 155.6 (*C*=O); m/z (CI) 430 (100%, M + H$^+$); HRMS found M + H 430.2853 $C_{28}H_{35}N_3O$ requires M + H 430.2853.

1-(2-*t*-Butyl-6-(3-oxobutan-2-yl)phenyl)-1-methyl-3-phenylurea (10i). In the same way, 1-(2-*t*-butyl-6-ethylphenyl)-1-methyl-3-phenylurea **7** (0.100 g, 0.32 mmol), *s*-BuLi (1.3 M solution in cyclohexane, 0.62 mL, 0.806 mmol, 2.5 equiv), and excess acetic anhydride (0.2 mL) gave the title compound as a white solid in 55% yield (0.062 g, 0.18 mmol) as a single diastereoisomer, mp 160−163 °C; R_f (1:3 EtOAc/petrol) 0.31; IR ν_{max}($CHCl_3$)/cm^{-1} 1712.5 (C=O), 1675.9 (C=O); δ_H (300 MHz; $CDCl_3$) 1.36 (s, 9H, C(C*H*$_3$)$_3$), 1.40 (d, J = 6.9 Hz, 3H, CHC*H*$_3$), 1.97 (s, 3H, C=OCH$_3$), 3.16 (s, 3H, NC*H*$_3$), 3.83 (q, J = 6.9 Hz, 1H, C*H*CH$_3$), 5.90 (bs, 1H, N*H*), 6.90−7.93 (m, 1H, Ar-*H*), 7.10 (dd, J = 7.6, 1.3 Hz, 1H, Ar-*H*), 7.13−7.17 (m, 4H, Ar-*H*), 7.33 (t, J = 7.9 Hz, 1H, Ar-*H*), 7.48 (dd, J = 8.2, 1.6 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 19.1 (CH*C*H$_3$), 29.1 (C(*C*H$_3$)$_3$), 32.1 (*C*(CH$_3$)$_3$), 36.6 (N*C*H$_3$), 38.8 (*C*HCH$_3$), 47.1 (C=O*C*H$_3$), 119.1, 123.1, 127.9, 128.8, 128.9, 129.4, 137.7, 138.3, 141.1, 148.9, 155.2 (C=O), 208.8 (C=O); m/z (CI) 353 (100%, M + H$^+$). HRMS found M + H$^+$ 353.2224. $C_{22}H_{28}N_2O_2$ requires M + H 353.2224.

1-(2-*t*-Butyl-6-propylphenyl)-1-methyl-3-phenylurea (11). In the same way, 1-(2-*t*-butylphenyl)-1-methyl-3-phenylurea **1** (R^1 = *t*-Bu)[6] (0.400 g, 1.42 mmol), *s*-BuLi (1.2 M solution in cyclohexane, 2.98 mL, 3.54 mmol, 2.5 equiv), and *n*-propyl iodide (0.35 mL, 2.5 equiv) gave the title compound as a white solid in 68% yield (0.310 g, 0.96 mmol), mp 98 °C; R_f (1:6 EtOAc/petrol) 0.19; IR ν_{max}($CHCl_3$)/cm^{-1} 1680.9 (C=O); δ_H (300 MHz; $CDCl_3$) 1.02 (t, J = 7.3 Hz, 3H, CH$_2$C*H*$_3$), 1.46 (s, 9H, C(C*H*$_3$)$_3$), 1.64−1.76 (m, 2H, CH$_2$C*H*$_2$CH$_3$), 2.48 (dd, J = 8.2, 7.9 Hz, 2H, C*H*$_2$CH$_2$CH$_3$), 3.25 (s, 3H, NC*H*$_3$), 5.98 (bs, 1H, N*H*), 6.99−7.03 (m, 1H, Ar-*H*), 7.26−7.32 (m, 5H, Ar-*H*), 7.38 (t, J = 7.6 Hz, 1H, Ar-*H*), 7.50 (dd, J = 7.9, 1.8 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$) 14.7 (*C*H$_3$CH$_2$CH$_2$), 23.9 (CH$_3$*C*H$_2$), 32.4 (C(*C*H$_3$)$_3$, 32.7 (CH$_3$CH$_2$*C*H$_2$), 36.7 (*C*(CH$_3$)$_3$, 38.6 (N*C*H$_3$), 119.6, 123.2, 127.6, 128.8, 129.1, 129.2, 138.5, 139.0, 143.3, 148.9, 155.6 (*C*=O); m/z (CI) 326 (100%, M + H$^+$); HRMS found M + H$^+$ 325.2277. $C_{21}H_{28}N_2O$ requires M + H 325.2274.

1-(2,6-Di-*s*-butylphenyl)-1-methyl-3-phenylurea (12). In the same way, 1-(2,6-diethylphenyl)-1-methyl-3-phenylurea **6** (0.150 g, 0.53 mmol), *s*-BuLi (0.8 M solution in cyclohexane, 1.70 mL, 1.33 mmol, 2.5 equiv), and ethyl iodide (0.05 mL, 0.62 mmol, 1.2 equiv) gave the title compound in 83% yield (0.162 g, 0.44 mmol), mp 82−83 °C; R_f (1:3 EtOAc/petrol) 0.58; IR ν_{max}($CHCl_3$)/cm^{-1} 1683.6 (C=O); δ_H (300 MHz; $CDCl_3$) 0.90 (t, J = 7.4 Hz, 6H, CH$_2$C*H*$_3$), 1.20 (d, J = 6.8 Hz, 6H, CHC*H*$_3$), 1.66 (qn, J = 7.4 Hz, 4H, CHC*H*$_2$CH$_3$), 2.88 (sp, J = 7.0 Hz, 2H, CH$_2$C*H*CH$_3$), 3.24 (s, 3H, NC*H*$_3$), 5.97 (bs, 1H, N*H*), 6.98−7.04 (m, 1H, Ar-*H*), 7.25−7.30 (m, 6H, Ar-*H*), 7.45 (t, J = 7.4 Hz, 1H, Ar-*H*); δ_C (75 MHz; $CDCl_3$), 13.0 (CH$_2$*C*H$_3$), 22.7 (CH*C*H$_3$), 31.4 (*C*H$_2$CH$_3$), 35.6 (N*C*H$_3$), 37.3 (*C*HCH$_3$), 119.5, 123.1, 125.5, 129.1, 129.9, 137.8, 139.0, 147.1, 155.3 (C=O); m/z (CI) 339 (100%, M + H$^+$); HRMS found M$^+$ 338.2356. $C_{22}H_{30}N_2O$ requires 338.2358.

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Supporting Information Available: CIF files of X-ray crystal structures of *anti*-**3c**, *syn*-**3d**, **10**, and **12**. General experimental data. Copies of ^{1}H and ^{13}C NMR spectra for all new compounds. This material is available free of charge via the Internet at http://pubs.acs.org.

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