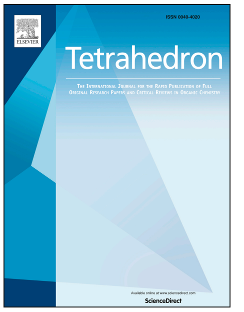

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Graphical Abstract

Enantioselective synthesis of BE ring analogues of methyllycaconitine

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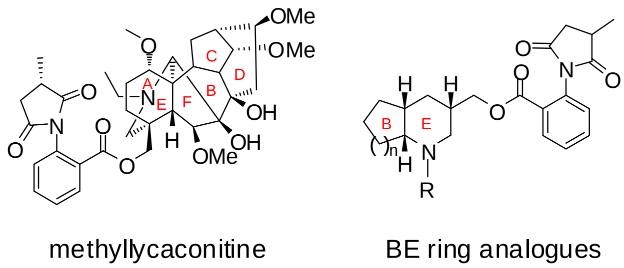

Enantioselective synthesis of BE ring analogues of methyllycaconitine

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Abstract: The enantioselective synthesis of decahydroquinolines mimicking the BE rings of methyllycacontine (MLA) is reported. The analogues were synthesised via a one-pot cyclisation using ethyl α-(bromomethyl)acrylate, (*R*)-1-phenylethanamine and cyclohexanone to form chiral octahydroquinolines which can be selectively hydrogenated to form the 3-substituted-decahydroquinolines with the same stereochemistry found in MLA. The amine and ketone components in the one-pot reaction can also be altered to provide access to structurally related heterocycles.

Key words: Multi-component reaction; quinolones; methyllycaconitine; enantioselective synthesis

1. Introduction

Methyllycaconitine (MLA) **1**, first discovered by Manske in 1938,[1] is the 2-[2-(*S*)-methylsuccinimido]benzoate ester of the norditerpenoid alkaloid lycoctonine **2** and is the major toxic component in *Delphinium brownii*.[2] An essential structural feature of MLA **1**, this *N*-substituted anthranilate ester is postulated to be a key pharmacophore in the molecule.[2,3] It has been proposed that at physiological pH the tertiary amine in the E ring system of MLA **1** is protonated and together with the ester form a homocholine motif which mimics acetylcholine.[2] It is also predicted that the methylsuccinimido moiety may help to maintain the correct geometry between the tertiary nitrogen atom of the piperidine E ring in the alkaloid with the carbonyl oxygen of the ester bond.[4]

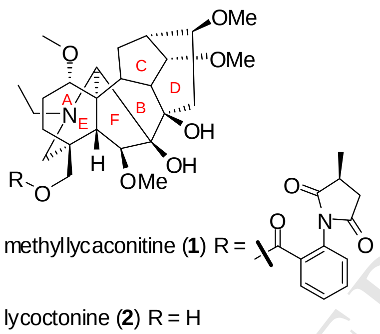


Figure 1. Methyllycaconitine **1** and lycoctonine **2**

The primary mode of action of methyllycaconitine **1** is through competitive blockade at the nicotinic acetylcholine receptors (nAChRs) and whilst methyllycaconitine binds to all subtypes of nAChRs it has high affinity to the α7 nAChR subtype. The α7 nAChR subtype is amongst the most common in the brain and has been linked to pain, neurodegenerative diseases such as Alzheimer's disease and Parkinson's disease as well as psychiatric disorders such as schizophrenia and depression.[5] MLA **1** is one of only a handful of compounds, which also include the poison frog alkaloid 235B[6] and the peptide toxins α-bungarotoxin and α-conotoxin ImI, that bind with high affinity and selectivity to the α7 nAChR.[7] Additionally, methyllycaconitine **1** is reported to be one of the most potent, non-protein, competitive α7 nAChR antagonists presently available.

Structure–activity relationship studies on MLA **1** have shown that the *N*-substituted anthranilate ester moiety is essential for potent pharmacological activity.[2] This can be seen through comparison of the neuronal activity of MLA **1** and lycoctonine **2**; it has been established that lycoctonine **2**, which does not contain this structural feature, exhibits 2000 times less affinity for rat neuronal α7 nAChRs than MLA **1** (Figure 1).[2] Similarly, removal of the *N*-ethyl group in the E ring results in a greater than 10-fold reduction in potency.[8] Of additional note, a structure–activity relationship study of simple E ring analogues by Bergmeier *et al.*[9] demonstrated that the *N*-3-phenylpropyl moiety in comparison to the natural *N*-Et group resulted in a significant increase in binding affinity.

In the hexacyclic core structure of methyllycaconitine **1** the key piperidine E ring is embedded within an azabicyclo[3.3.1]nonane and a decahydroquinoline, forming the AE and BE ring systems respectively. Many groups,[9,10,11] including our own,[10] have synthesised analogues of these alkaloids and most previous syntheses have focused on constructing azabicyclo[3.3.1]nonanes[10,11] to mimic the AE rings, whilst others have worked specifically on the synthesis of piperidine E-ring analogues **2** (Figure 1). There are, however, only two reported examples of BE ring analogues, both of which were racemic analogues and only in one was the pharmacologically important anthranilate ester moiety introduced.[12]

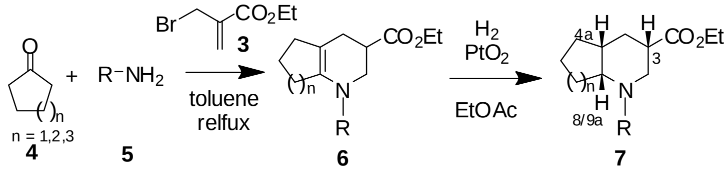
We have previously reported[12] the synthesis of racemic BE ring analogues using a one-pot bicyclization reaction of cyclohexanone and non-volatile amines to form the core octahydroquinoline. We now herein report the enantioselective synthesis of the decahydroquinoline BE rings of methyllycaconitine as well as a number of bicyclic analogues of the BE ring system.

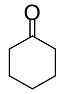
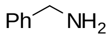
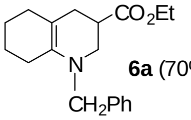
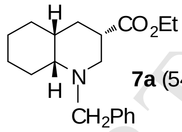
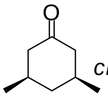
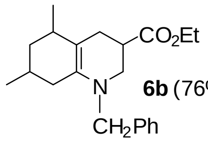
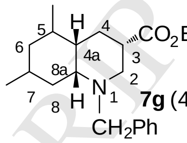
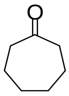
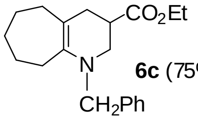
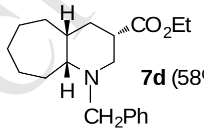
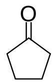
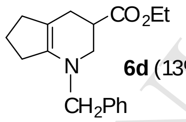
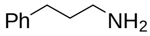
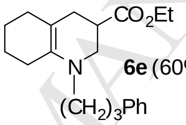
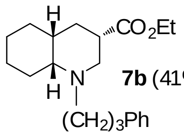
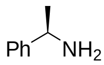
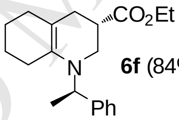
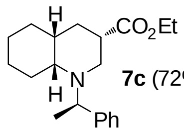
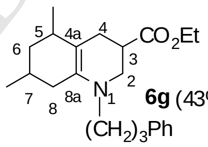
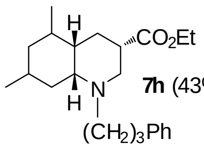
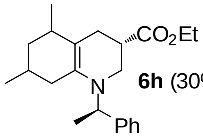
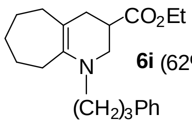
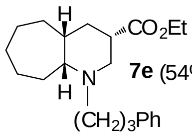
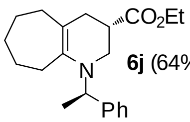
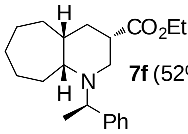
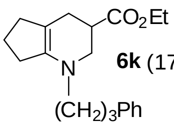
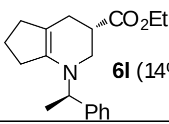
2. Results and Discussion

Our synthetic strategy to the bicyclic compounds utilizes a one-pot reaction involving, a primary amine, ethyl α-(bromomethyl)acrylate **3** and a cyclic ketone and is based on a method first reported by Hori *et al.* for the synthesis of ergot alkaloids.[13] We previously demonstrated the method could be applied using cyclohexanone **4a** and non-volatile amines to afford octahydroquinolines in good yields. All previous examples of this condensation utilized a cyclohexanone[12,13] as the ketone component, therefore we first wished to determine whether other cyclic ketones could be used to provide alternative heterocyclic systems. 3,5-*cis*-Dimethylcyclohexanone **4b** was prepared from the hydrogenation of 3,5-dimethyl-2-cyclohexen-1-one,[14] whilst commercially available cyclohexanone **4a**, cycloheptanone **4c** and cyclopentanone **4d** were also chosen. Ethyl α-(bromomethyl)acrylate **3** was prepared from ethyl acrylate using literature methods.[15] Ketones **4a-d** were then reacted with acrylate **3** and benzylamine **5a** and gave bicycles **6a-c** in similar 70-76% yields (Table 1, entries 1-3). The 5/6-fused bicycle **6d** formed from cyclopentanone **4d** and benzylamine **5a** was obtained in only 13% yield (Table 1, entry 4). To expand our study we then tested the reaction with alternative primary amines, 3-phenylpropylamine **5b** and chiral amine (*R*)-α-methyl benzylamine **5c**, again using ketones **4a-d** (Table 1, entries 5-12). The yields of the bicyclic compounds **6e-j** were similar to those produced using benzylamine **5a**, with reactions involving cyclopentanone **4d** again giving bicycles **6k,l** in lower yields. Bicycles **6f,h,j,l** were obtained as single diastereomers, which were later determined to have an *S* configuration at C-3 (see below). The lower yields of the 5/6-fused bicyles **6d**,**k**,**l** are presumably due to the unfavourable formation of this more strained ring system. Due to the fact that these compounds **6d,k,l** were obtained in low yields and were found to be unstable even when stored at low temperatures, only the elaboration of bicycles **6a-c,e-j** was pursued. Bicycles **6b**,**g**,**h** were obtained as single diastereomers with NOESY correlations between H-5 and H-7 indicating the methyl groups at these positions were *syn*. However, the relative stereochemistry between H-3 and H-5/7 could not be determined.

With bicycles **6a-c,e-j** mimicking the BE rings of methyllycaonitine in hand, we turned to the hydrogenation of the tetrasubstituted alkene to obtain the *cis* stereochemistry which is found in ring systems of MLA **1**. Bicycles **6a-c,e-j** were hydrogenated (1 atm.) over Adam's catalyst (PtO_2)[13] in ethyl acetate for 18 h to afford the corresponding saturated bicycles **7a-i** (Scheme 1). Purification of the bicycles was performed using basic alumina, as significant loss of product was found when silica gel was used. Hydrogenation of the unsubstituted octahydroquinolines **6a,e,f** gave decahydroquinolines **7a-c** in 41–72% yield, while hydrogenation of the 6/7-fused bicycles **6c,i,j** and dimethyl-substituted octahydroquinolines **6b,g,h** gave saturated bicycles **7d-h** in generally lower yields, whilst **7i** was not formed and only a complex mixture obtained. In all cases only the *cis-syn* stereochemistry was obtained, as confirmed by the observation of NOESY correlations between 4a-H and both 8a-H (9a-H in the case of **7d-f**) and 3-H, thus establishing the relative stereochemistry to be the same as that found in MLA **1** (Figure 2). The stereochemistry was further confirmed when a subsequent derivative was found to be suitable for X-ray crystallographic analysis (see below). Decahydroquinolines **7g** and **7h** were isolated as single diastereomers where the relationship between H-5/7 and H-3/4a/8a could not be determined thus **7g** and **7h** are either the 3*S**,4a*S**,5*R**,7*S**,8a*R** or 3*S**,4a*S**,5*S**,7*R**,8a*R** diastereomers.

Table 1: Synthesis of bicyclic aminoesters **6** and **7**



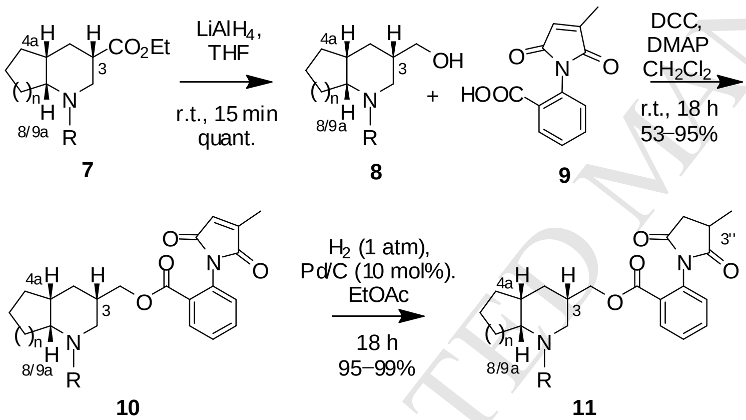
Entry	Ketone	Amine	Bicycle **6** (Yield %)	Bicycle **7** (Yield %)
1	 **4a**	 **5a**	 **6a** (70%)	 **7a** (54%)
2	 *cis*-**4b**	**5a**	 **6b** (76%)*	 **7g** (42%)*
3	 **4c**	**5a**	 **6c** (75%)	 **7d** (58%)
4	 **4d**	**5a**	 **6d** (13%)	NA
5	**4a**	 **5b**	 **6e** (60%)	 **7b** (41%)
6	**4a**	 **5c**	 **6f** (84%)	 **7c** (72%)
7	**4b**	**5b**	 **6g** (43%)*	 **7h** (43%)*
8	**4b**	**5c**	 **6h** (30%)*	**7i** Complex mixture
9	**4c**	**5b**	 **6i** (62%)	 **7e** (54%)
10	**4c**	**5c**	 **6j** (64%)	 **7f** (52%)
11	**4d**	**5b**	 **6k** (17%)	NA
12	**4d**	**5c**	 **6l** (14%)	NA

NA = not attempted. * The relationship between the *syn* 5/7-dimethyl groups and H-3 could not be determined.

7

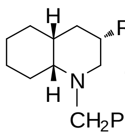
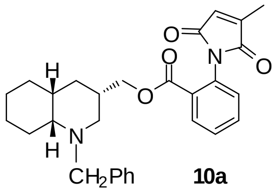
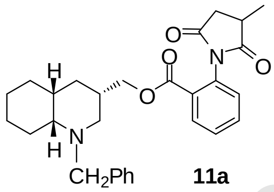
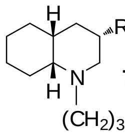
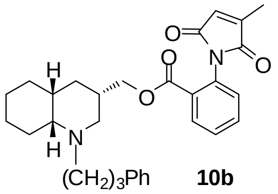
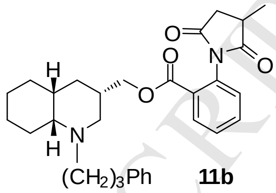
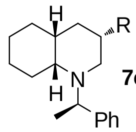
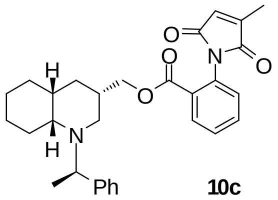
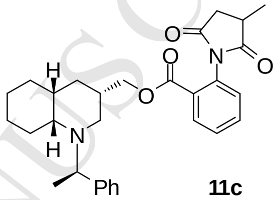
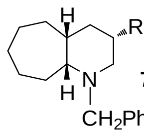
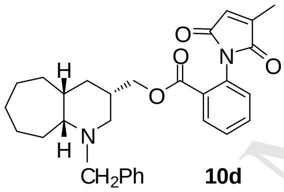
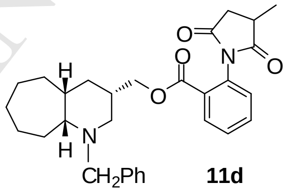
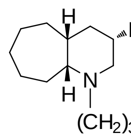
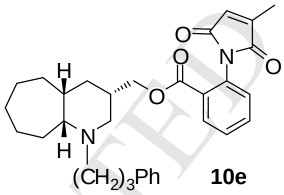
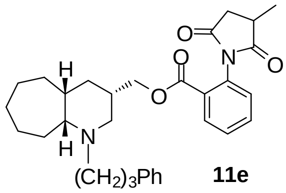
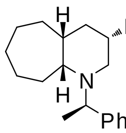
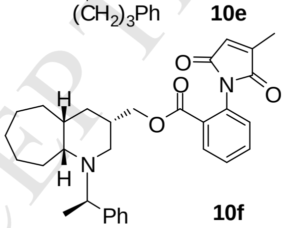
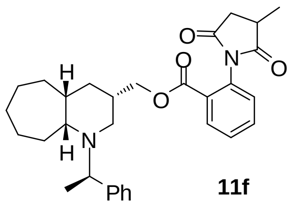
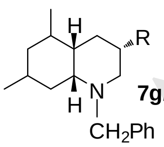
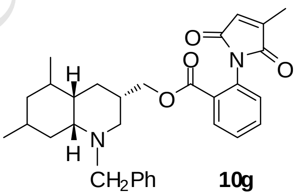
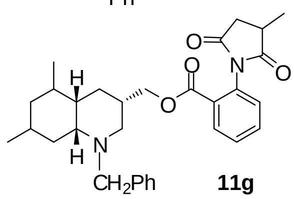
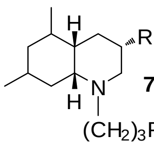
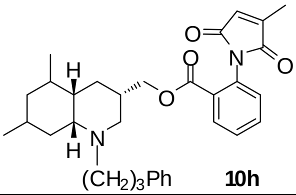
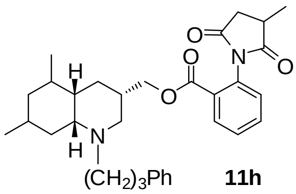
Figure 2. Relative stereochemistry of saturated bicycles **7** determined by nOe interactions between H-3, H-4a and H-8a.

With the saturated bicycles mimicking the BE rings of MLA now formed, the addition of the 2-(2-methylsuccinimido)benzoate ester was required (Scheme 1, Table 2). This was achieved by reduction of the ethyl esters **7a-h** using $LiAlH_4$ in THF to afford alcohols **8a-h** in quantitative yield. After purification, alcohol **8c** bearing the chiral (*R*)-α-methyl benzylamine moiety was obtained as a crystalline solid suitable for X-ray crystallographic analysis (Figure 3). The X-ray crystal structure confirmed the stereochemistry between H-4a, H-8a and H-3 and established the absolute stereochemistry of the bicycle to be 3*S*,4a*R*,8a*R*, which is the same as that found in MLA **1**. The final steps were to install the succinimido anthranilate ester pharmacophore of MLA **1**. This was achieved firstly by the DCC (2 equiv.), DMAP (0.1 equiv.) mediated coupling of 2-(3-methyl-2,5-dioxo-2,5-dihydro-1*H*-pyrrol-1-yl)benzoic acid **9**[16] (2.0 equiv.) with alcohols **8a-h**, in CH_2Cl_2**,** and afforded anthranilate esters **10a-h** in 53–95% yields. Finally the maleimide unit in anthranilates **10a-h** was hydrogenated over 10% palladium on charcoal (1 atm.) for 18 h to yield the desired succinimido anthranilates **11a-h** in near quantitative yields. This reaction gave succinimido anthranilates **11a-h** as 1:1 mixtures of diastereomers at the C-3″ position. Preparation of enantiopure succinimido anthranilates has previously been achieved via the three step process[10q,16] however biological assessment has shown diastereomeric mixtures have similar activity to single isomers.[9h,10l]



Scheme 1. Synthesis of succinimido anthranilates **11**.

Table 2: Synthesis of succinimido anthranilates **11**.

Bicycles **7**/**8** (R = CO_2Et, **7**; R = CH_2OH, **8**)	Anthranilate ester **10**	Succinimido anthranilate **11**	Yield from **7** (three steps)
 **7a/8a**	 **10a**	 **11a**	51%
 **7b/8b**	 **10b**	 **11b**	90%
 **7c/8c**	 **10c**	 **11c**	67%
 **7d/8d**	 **10d**	 **11d**	76%
 **7e/8e**	 **10e**	 **11e**	63%
 **7f/8f**	 **10f**	 **11f**	87%
 **7g/8g**	 **10g**	 **11g**	68%
 **7h/8h**	 **10h**	 **11h**	76%

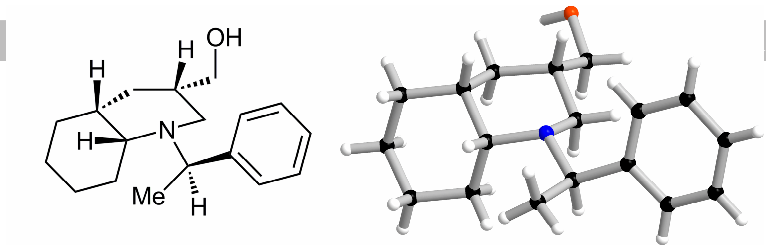
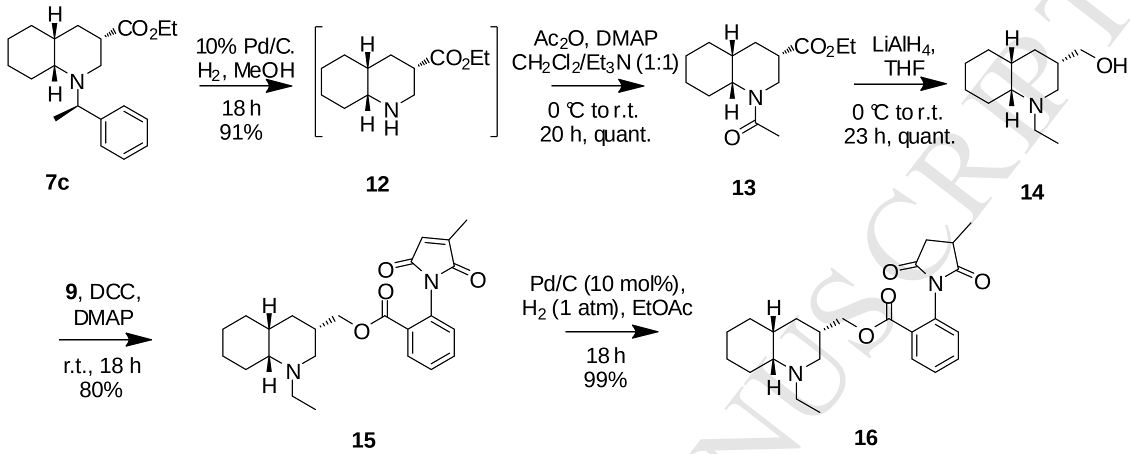


Figure 3. X-ray crystal structure of **8c** (available from the CCDC: 1419766).



Scheme 2. Synthesis of succinimide anthranilate **16**.

The decahydroquinoline BE rings of MLA **1** have an *N*-ethyl group and we envisaged that this could be introduced by hydrogenolysis of the (*R*)-α-methyl benzylamine moiety in **7c** and subsequent addition of an ethyl moiety. Whilst the α-methyl benzylamine group had not been removed upon hydrogenation over PtO_2 we found that hydrogenation of **7c** over 10% palladium on charcoal (1 atm.) in MeOH for 18 h gave amine **12** in 91% yield (Scheme 2). Amine **12** was reacted immediately with acetic anhydride and DMAP in CH_2Cl_2/Et_3N (1:1) to allow acetamide **13** in quantitative yield. Acetamide **13** underwent complete degradation when subjected to chromatography with either silica or alumina and was therefore reduced immediately, using $LiAlH_4$, to give amino alcohol **14** in quantitative yield. Coupling of alcohol **14** with acid **9** followed by hydrogenation of the resultant maleimide **15** gave succinimido anthranilate **16** in 79% yield over two steps. Anthranilate **16** contains the complete carbon framework of the BE rings of MLA **1** including the natural *N*-ethyl substituent, with the same absolute stereochemistry as the natural product.

3. Conclusions

In conclusion we have reported the use of a three component, one-pot, cyclisation reaction to form 2,3-fused 5/6, 6/6 and 7/6 piperidine heterocycles. Subsequent transformation of the bicycles into analogues of the BE rings of MLA **1** has also been achieved. Use of a chiral (*R*)-α-methyl benzylamine auxiliary allowed the synthesis of enantiopure decahydroquinoline **7c** which was converted into succinimido anthranilate **16** in 72% yield in 5 steps. This synthesis of anthranilate **16** constitutes the first asymmetric synthesis of the complete carbon framework of the BE rings of methyllycaconitine **1**.

4. Experimental Section

4.1 General Experimental

Analytical thin layer chromatography (TLC) was performed using 0.2 mm thick precoated silica gel plates (Merck Kieselgel 60 F254). Compounds were visualized by ultraviolet fluorescence or by staining iodine. Flash chromatography was performed using Riedel-de Haën silica gel (0.032-0.063 mm) with the indicated solvents. ^{1}H NMR spectra were recorded with a Bruker DRX 300 (300 MHz) or a Bruker DRX 400 (400 MHz) spectrometer at ambient temperature using $CDCl_3$ as a solvent. Chemical shifts are given in parts per million (ppm) downfield shift from tetramethylsilane as an internal standard, and reported as position (δ), multiplicity (s = singlet, d = doublet, dd = double of doublets, ddd = doublet of doublet of doublets, ddt = doublet of doublet of triplets, dt = doublet of triplets, m = multiplet, t = triplet, td = triplet of doublets, q = quartet), relative integral, assignment and coupling constant (*J* in Hz). ^{13}C NMR spectra were recorded with a Bruker DRX 300 (75 MHz) or a Bruker DRX 400 (100 MHz) spectrometer at ambient temperature with complete proton decoupling. Chemical shifts are expressed in parts per million referenced to the residual chloroform peak (δ = 77.0 ppm), and reported as position (δ) and assignment, aided by DEPT 135 experiments. In addition, ^{1}H-^{1}H-COSY, ^{1}H-^{1}H-NOESY and ^{1}H-^{13}C-HSQC correlation spectra were used for the complete assignment of the proton and carbon resonances. High resolution mass spectra were recorded with a VG-70SE mass spectrometer. Ionisation method employed was electron impact (EI) or electrospray ionization (ESI). Melting points were determined on a Kofler hot-stage apparatus and are uncorrected. $[\alpha]_D^{20}$ values are given in 10^{-1} deg cm^3 g^{-1}. Ethyl 2-(bromomethyl)acrylate **3**[15] and 2-(3-methyl-2,5-dioxo-2,5-dihydropyrrol-1-yl)benzoic acid **9**[16] were prepared as reported. X-ray crystal structures were obtained using a Bruker SMART platform goniometer with a CCD area detector at 150 K with structural solution and refinement by SHELXTL software package.

4.1.1 3,5-cis-Dimethylcyclohexanone **4b**. To a solution of 3,5-dimethyl-2-cyclohexeneone (0.400 g, 3.22 mmol) in isopropanol (4.0 mL) was added 10% palladium on carbon (0.04g, 0.38 mmol) and the resulting mixture was stirred under an atmosphere of hydrogen for 2 h. The mixture was filtered through Celite and washed with further isopropanol (20 mL) and the solvent was removed *in vacuo* to give the *title compound* **4b** (0.406 g, 100%) as a pale blue/green oil that was used immediately without further purification; ^{1}H NMR (400 MHz; $CDCl_3$): δ = 1.02 (6H, d, *J* = 5.8 Hz, 3-CH_3 and 5-CH_3), 1.78-1.97 (4H, m, H-3, H-4, H-5), 2.33 (4H, d, *J* = 11.8 Hz, H-2 and H-6). ^{13}C NMR (100 MHz, $CDCl_3$) 22.3 (3-CH_3 and 5-CH_3), 33.2 (C-3 and C-5), 42.8 (C-4), 49.2 (2 x CH_2, C-2 and C-6), 212.11 (q, COO). The spectroscopic data was consistent with literature values.[14]

4.2 General Method A: Three component synthesis of bicycles 6. To amine **5** (6.0 mmol) in toluene (32 mL) was added dropwise ethyl 2-(bromomethyl)acrylate **3** (3.00 mmol) in toluene (5 mL) at 0 °C. After 15 min a solution of cyclic ketone **4** (3.00 mmol) in toluene (5 mL) was added and the reaction mixture was heated under reflux under N_2 for 18 h using a Dean-Stark trap containing 5 Å molecular sieves. The mixture was cooled and extracted with 1 M HCl (2 × 100 mL). The combined aqueous layers were washed with ethyl acetate (100 mL), basified with solid Na_2CO_3 and then extracted with CH_2Cl_2 (3 × 75 mL). The extract was dried Na_2SO_4 and concentrated *in vacuo*. The crude product was purified by column chromatography using silica gel to give the desired unsaturated bicycle **6**.

4.2.1 Ethyl 1-benzyl-1,2,3,4,5,6,7,8-octahydroquinoline-3-carboxylate **6a**. Using general method A, benzyl amine **5a** (0.655 mL, 6.0 mmol) and cyclohexanone **4a** (0.310 mL, 3.0 mmol) after purification by flash chromatography (20% ethyl acetate in *n*-hexanes) gave the *title compound* **6a** (0.632 g, 70%) as a bright yellow oil; R_F = 0.68 (4:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3025, 2927, 2836, 1727, 1176, 1027; ^{1}H NMR (300 MHz; $CDCl_3$): δ = 1.21 (3H, t, *J* = 7.0 Hz, OCH_2CH_3), 1.55-1.73 (4H, m, H-6 and H-7), 1.81-2.14 (3H, m, H-5 and H_A-8), 2.15-2.26 (3H, m, H-4 and H_B-8), 2.61-2.75 (1H, m, H-3), 2.91 (1H, t, *J* = 11.3 Hz, H_A-2), 3.14 (1H, ddd, *J* = 1.9, 3.3, 11.3 Hz, H_B-2), 3.96-4.06 (2H, m, NCH_2Ph), 4.07-4.13 (2H, m, OCH_2CH_3), 7.22-7.33 (5H, m, Ar-H); ^{13}C NMR (75.5 MHz; $CDCl_3$): δ = 14.14 (OCH_2CH_3), 23.0 (C-7), 23.6 (C-6), 26.7 (C-5), 29.9 (C-8), 31.2 (C-4), 37.6 (C-3), 50.0 (C-2), 53.8 (NCH_2Ph), 60.2 (OCH_2CH_3), 106.3 (C-4a), 126.7 (Ar-CH), 127.6 (Ar-CH), 128.19 (Ar-CH), 135.9 (q, C-8a), 140.12 (Ar-C) and 174.5 (q, COO); MS (EI): *m/z* = 299 (M^+, 76%), 226 (25), 208 (75), 91 (100); HRMS (EI): $C_{19}H_{25}NO_2$ requires 299.18853; found: 299.18823.

4.2.2 Ethyl 1-benzyl-5,7-dimethyl-1,2,3,4,5,6,7,8-octahydroquinoline-3-carboxylate **6b**. Using general method A, benzylamine **5a** (0.568 mL, 5.2 mmol) and 3,5-*cis*-dimethylcyclohexanone **4b** (0.372 mL, 2.6 mmol) after purification by flash chromatography (20% ethyl acetate in *n*-hexanes) gave the *title compound* **6b** (0.605 g, 76%) as a pale yellow oil. R_F = 0.75 (4:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3019, 2951, 2907, 1729, 1453, 1171, 1028; ^{1}H NMR (400 MHz; $CDCl_3$): δ = 0.80-0.92 (1H, m, H_A-6), 0.96 (3H, d, *J* = 6.2 Hz, 5-$CHCH_3$), 1.00 (3H, d *J* = 6.6 Hz, 7-$CHCH_3$), 1.22 (3H, t, *J* = 7.0 Hz, OCH_2CH_3), 1.61-1.79 (3H, m, H-4 and H_B-6), 1.99 (1H, dd, *J* = 3.0, 15.8 Hz, H_A-8), 2.12-2.25 (2H, m, H-5 and H-7), 2.35 (1H, td, *J* = 3.0, 13.6 Hz, H_B-8), 2.67 (1H, tdd, *J* = 2.8, 5.2 and 11.3 Hz, H-3), 2.78 (1H, t, *J* = 11.3 Hz, H_A-2), 3.13 (1H, dt, *J* = 2.8, 11.3 Hz, H_B-2), 3.95-4.02 (1H, m, NCH_AH_BPh), 4.05-4.13 (2H, m, $CO_2CH_2CH_3$), 4.14-4.27 (1H, m, NCH_AH_BPh) and 7.20-7.36 (5H, m, Ar-H); ^{13}C NMR (100 MHz, $CDCl_3$): δ = 14.2 (OCH_2CH_3), 20.5 (7-CHCH_3), 22.2 (5-CHCH_3), 29.2 (C-8), 35.2 (C-5 and C-7), 35.7 (C-4), 38.3 (C-3), 41.6 (C-6), 49.9 (C-2), 53.9 (NCH_2Ph), 60.3 (OCH_2CH_3), 109.1 (C-4a), 126.7 (Ar-CH), 127.5 (Ar-CH), 128.3 (Ar-CH), 135.9 (C-8a), 140.1 (Ar-C) and 174.8 (COO); HRMS (ESI): *m/z* $[MH]^+$ $C_{21}H_{30}NO_2$ requires 328.2270; found 328.2271.

4.2.3 Ethyl 1-benzyl-2,3,4,5,6,7,8,9-octahydro-1H-cyclohepta[b]pyridine-3-carboxylate **6c**. Using general method A benzylamine **5a** (0.568 mL, 5.2 mmol) and cycloheptanone **4c** (0.306 mL, 2.6 mmol) after purification by flash chromatography (33% ethyl acetate in *n*-hexanes) gave the *title compound* **6c** (0.611g, 75%) as a bright yellow oil. R_F = 0.7 (4:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3063, 3035, 2915, 2843, 1728, 1454, 1155; ^{1}H NMR (400 MHz; $CDCl_3$) δ = 1.21 (3H, t, *J* = 7.2 Hz, OCH_2CH_3), 1.30-1.51, 1.54-1.75, 1.76-1.87 and 2.19-2.43 (10H, 4 x m, H-5, H-6, H-7, H-8 and H-9), 2.02-2.16 (2H, m, H-4), 2.54-2.64 (1H, m, H-3), 2.68-2.79 (1H, m, H_A-2), 3.03-3.12 (1H, m, H_B-2), 3.55-3.64 (1H, m, NCH_ACH_BPh), 4.03-4.14 (3H, m, NCH_ACH_BPh and OCH_2CH_3) and 7.16-7.39 (5H, m, Ar-H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 14.2 (OCH_2CH_3), 27.0, 27.6, 32.2, 32.3 and 32.5 (C-5, C-6, C-7, C-8 and C-9), 33.6 (C-4), 35.6 (C-3), 49.4 (C-2), 54.4 (NCH_2Ph), 60.2 (OCH_2CH_3), 116.0 (C-4a), 126.9 (Ar-CH), 127.9 (Ar-CH), 128.1 (Ar-CH), 139.9 (q, C-9a), 143.3 (Ar-C), 174.7 (COO); HRMS (ESI): *m/z*: $[MH]^+$ $C_{20}H_{28}NO_2$ requires 314.2115; found 314.2115.

4.2.4 Ethyl 1-benzyl-2,3,4,5,6,7-hexahydro-1H-cyclopenta[b]pyridine-3-carboxylate **6d**. Using general method A benzylamine **5a** (0.568 mL, 5.2 mmol) and cyclopentanone **4d** (0.230 mL, 2.6 mmol) after purification by flash chromatography (66% ethyl acetate in *n*-hexanes) gave the *title compound* **6d** (0.101 g, 13%) as a brown oil. R_F = 0.65 (4:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3469, 2934, 2843, 1727, 1452, 1367, 1179; ^{1}H NMR (400 MHz; $CDCl_3$) δ = 1.21 (3H, t, *J* = 7.5 Hz, OCH_2CH_3), 1.83-1.94 (2H, m, H-6), 2.17-2.34 (3H, m, H-4, H_A-5), 2.37-2.44 (1H, m, H_B-5), 2.45-2.53 (2H, m, H-7), 2.70-2.80 (1H, m, H-3), 2.93 (1H, t, *J* = 11.5 Hz, H_A-2), 3.08-3.15 (1H, m, H_B-2), 4.02-4.17 (4H, m, NCH_2Ph and OCH_2CH_3), 7.20-7.39 (5H, m, Ar-H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 14.1 (OCH_2CH_3), 20.8 (C-6), 26.9 (C-4), 31.2 (C-7), 34.0 (C-5), 39.0 (C-3), 49.5 (C-2), 55.6 (NCH_2Ph), 60.3 (OCH_2CH_3), 106.6 (C-4a), 126.8 (Ar-CH). 127.7 (Ar-CH), 128.3 (Ar-CH), 139.3 (Ar-C), 141.8 (C-7a), 174.4 (COO); HRMS (ESI): *m/z* = $[MH^+]$ $C_{18}H_{24}NO_2$ requires 286.1802; found 286.1810.

4.2.5 Ethyl 1-(3-phenylpropyl)-1,2,3,4,5,6,7,8-octahydroquinoline-3-carboxylate **6e**. Using general method A 3-phenylpropylamine **5b** (0.854 mL, 6.0 mmol) and cyclohexanone **4a** (0.310 mL, 3.0 mmol) after purification by flash chromatography (20% ethyl acetate in *n*-hexanes) gave the *title compound* **6e** (0.589 g, 60%) as a pale yellow oil. R_F = 0.8 (4:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3025, 2925, 2857, 1727, 1496, 1379, 1260, 1176, 1026; ^{1}H NMR (300 MHz; $CDCl_3$) δ = 1.25 (3H, t, *J* = 6.8 Hz, OCH_2CH_3), 1.43-1.79 (4H, m, H-6 and H-7), 1.72-1.79 (2H, m, $NCH_2CH_2CH_2Ph$), 1.82-1.90 (4H, m, H-5 and H-8), 1.97-2.03 (2H, m, H-4), 2.59 (2H, dt, *J* = 2.7, 8.3 Hz, $NCH_2CH_2CH_2Ph$), 2.71 (1H, ddt, *J* = 3.3, 5.7, 11.8 Hz, H-3), 2.86-2.99 (3H, m, H_A-2 and $NCH_2CH_2CH_2Ph$), 3.20 (1H, ddd, *J* = 1.8, 3.3, 11.8 Hz, H_B-2), 4.15 (2H, m, OCH_2CH_3), 7.17-7.28 (5H, m, Ar-H); ^{13}C NMR (75.5 MHz; $CDCl_3$) δ = 14.2 (OCH_2CH_3), 22.9 (C-7), 23.6 (C-6), 26.4 ($NCH_2CH_2CH_2Ph$), 29.7 (C-8), 29.9 (C-5), 31.2 (C-4), 33.36 ($NCH_2CH_2CH_2Ph$), 38.1 (C-3), 50.0 ($NCH_2CH_2CH_2Ph$), 50.2 (C-2), 60.3 (OCH_2CH_3), 106.1 (C-4a), 125.7 (Ar-CH), 128.3 (2 x Ar-CH), 135.8 (q, C-8a), 142.0 (Ar-C), 174.6 (COO); MS (EI): *m/z* = 327 (M^+, 4%), 222 (10), 91 (55); HRMS (EI): $C_{21}H_{29}NO_2$ requires 327.2198; found 327.2197.

4.2.6 (3S)-Ethyl 1-((R)-1-phenylethyl)-1,2,3,4,5,6,7,8-octahydroquinoline-3-carboxylate **6f**. Using general method A, (*R*)-1-phenylethylamine **5c** (0.727 mL, 6.0 mmol) and cyclohexanone **4a** (0.310 mL, 3.0 mmol) after purification by flash chromatography (20% ethyl acetate in *n*-hexanes) gave the *title compound* **6f** (0.789 g, 84%) as a bright yellow oil. $[\alpha]_D^{20}$ + 39 (*c* 0.89, $CHCl_3$); R_F = 0.70 (4:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3021, 2930, 2846, 1727, 1446, 1371, 1176, 1026; ^{1}H NMR (300 MHz; $CDCl_3$) δ = 1.94 (3H, t, *J* = 7.1 Hz, OCH_2CH_3), 1.43 (3H, d, *J* = 7.0 Hz, $NCH(CH_3)Ph$), 1.60-1.77 (4H, m, H-6 and H-7), 1.85-2.08 (3H, m, H-5 and H_A-8), 2.13-2.36 (3H, m, H-4 and H_B-8), 2.61-2.70 (2H, m, H_A-2 and H-3), 2.98-3.10 (1H, m, H_B-2), 3.99-4.17 (2H, m, OCH_2CH_3), 4.73-4.81 (1H, m, $NCH(CH_3)Ph$), 7.23-7.40 (5H, m, Ar-H); ^{13}C NMR (75 MHz; $CDCl_3$) δ = 14.1 (OCH_2CH_3), 15.5 ($NCH(CH_3)Ph$), 23.1 (C-7), 23.9 (C-6), 26.7 (C-5), 30.1 (C-8), 30.3 (C-4), 38.1 (C-3), 44.9 (C-2), 53.3 ($NCH(CH_3)Ph$), 60.1 (OCH_2CH_3), 105.6 (C-4a), 126.5 (Ar-CH), 127.2 (Ar-CH), 128.6 (Ar-CH), 134.5 (C-8a), 143.3 (Ar-C), 174.7 (COO); HRMS (ESI): *m/z* = $[M]^+$ $C_{20}H_{27}NO_2$ requires 313.20418; found 313.20420.

4.2.7 Ethyl 5,7-dimethyl-1-(3-phenylpropyl)-1,2,3,4,5,6,7,8-octahydroquinoline-3-carboxylate **6g**. Using general method A 3-phenylpropylamine **5b** (0.740 mL, 5.2 mmol) and 3,5-*cis*-dimethylcylohexanone **4b** (0.372 mL, 2.6 mmol) after purification by flash chromatography (33% ethyl acetate in *n*-hexanes) gave the *title compound* **6g** (0.400 g, 43%) as a pale yellow oil. R_F = 0.6 (3:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3028, 2956, 2925, 1721, 1451, 1188, 1028; ^1H NMR (400 MHz; $CDCl_3$) δ = 0.75-0.84 (1H, m, H_A-6), 0.92 (3H, d, *J* = 6.2 Hz, 5-CHC-H_3), 0.95 (3H, d, *J* = 6.8 Hz, 7-CHCH_3), 1.26 (3H, t, *J* = 7.2 Hz, OCH_2CH_3), 1.44-1.54 (1H, m, H_A-4), 1.50-1.61 (1H, m, H-5), 1.62-1.70 (1H, m, H_B-6), 1.66-1.70 (1H, m, H_A-8), 1.78-1.87 (1H, m, H_B-8), 1.89-1.97 (1H, m, $NCH_2CH_AH_BCH_2Ph$), 1.98-2.05 (1H, m, H_B-4), 2.06-2.14 (1H, m, H-7), 2.25-2.35 ($NCH_2CH_AH_BCH_2Ph$), 2.58 (2H, t, *J* = 7.7 Hz, $NCH_2CH_2CH_2Ph$), 2.60-2.70 (1H, m, H-3), 2.84 (1H, t, *J* = 11.0 Hz, H_A-2), 2.91 (2H, t, *J* = 7.4 Hz, $NCH_2CH_2CH_2Ph$), 3.22 (1H, dt, *J* = 2.6, 11.2 Hz, H_B-2), 4.07-4.19 (2H, m, OCH_2CH_3), 7.11-7.31 (5H, m, Ar-H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 14.2 (OCH_2CH_3), 20.4 (7-CHCH_3), 22.1 (5-CHCH_3), 29.0 and 29.1 (C-5, C-8 and $NCH_2CH_2CH_2Ph$), 33.2 ($NCH_2CH_2CH_2Ph$), 35.2 and 35.3 (C-7 and C-4), 38.6 (C-3), 41.4 (C-6), 50.0 (C-2 and $NCH_2CH_2CH_2Ph$), 60.2 (OCH_2CH_3), 109.2 (C-4a), 125.6 (Ar-CH), 128.8 (Ar-CH), 128.3 (Ar-CH), 135.7 (C-8a), 141.9 (Ar-C), 174.8 (COO); HRMS (ESI): *m/z* = $[MH]^+$ $C_{23}H_{34}NO_2$ requires 356.2584; found 356.2590.

4.2.8 (3S)-Ethyl 5,7-dimethyl-1-((R)-1-phenylethyl)-1,2,3,4,5,6,7,8-octahydroquinoline-3-carboxylate **6h**. Using general method A (*R*)-1-phenethylamine **5c** (0.670 mL, 5.2 mmol) and 3,5-*cis*-dimethylcylohexanone **4b** (0.372 mL, 2.6 mmol) after purification by flash chromatography (33% ethyl acetate in *n*-hexanes) gave the *title compound* **6h** (0.266 g, 30%) as a pale yellow oil. R_F = 0.65 (3:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 2906, 2870, 1729, 1448, 1371, 1170; ^1H NMR (400 MHz; $CDCl_3$) δ = 0.82-0.92 (1H, m, H_A-6), 0.99 (6H, d, *J* = 6.7 Hz, 5-CHCH_3 and 7-CHCH_3), 1.21 (3H, t, *J* = 7.0 Hz, OCH_2CH_3), 1.47 (CH_3, d, *J* = 7.4 Hz, NCH(CH_3)Ph), 1.65-1.81 (3H, m, H-5, H_B-6 and H-7), 1.93-2.00 (1H, m, H_A-8), 2.15-2.21 (1H, m, H_A-4), 2.23-2.33 (1H, m, H_B-8), 2.36-2.50 (2H, H_A-2 and H_B-4), 2.55-2.63 (1H, m, H-3), 3.07-3.14 (1H, m, H_B-2), 4.03-4.16 (2H, m, OCH_2CH_3), 4.90 (1H, q, *J* = 7.4 Hz, NCH(CH_3)Ph), 7.19-7.39 (5H, m, Ar-H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 14.2 (OCH_2CH_3), 17.0 (NCH(CH_3)Ph), 20.7 (7-CHCH_3), 22.3 (5-CHCH_3), 29.3 (C-5 or C-7), 29.5 (C-8), 35.46 (C-5 or C-7 and C-4), 39.6 (C-3), 41.5 (C-6), 44.5 (C-2), 53.1 (NCH(CH_3)Ph), 60.2 (OCH_2CH_3), 108.3 (C-4a), 126.5 (Ar-CH), 127.5 (Ar-CH), 128.2 (Ar-CH), 134.8 (C-8a), 142.9 (Ar-C) and 175.1 (COO); HRMS (ESI) *m/z* = $[MH]^+$ $C_{22}H_{32}NO_2$ requires 342.2428; found 342.2434.

4.2.9 Ethyl 1-(3-phenylpropyl)-2,3,4,5,6,7,8,9-octahydro-1H-cyclohepta[b]pyridine-3-carboxylate **6i**. Using general method A 3-phenylpropylamine **5b** (0.740 mL, 5.2 mmol) and cycloheptanone **4c** (0.306 mL, 2.6 mmol) after purification by flash chromatography (20% ethyl acetate in *n*-hexanes) gave the *title compound* **6i** (0.551 g, 62%) as a yellow oil. R_F = 0.5 (2:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3025, 2919, 2848, 1726, 1453, 1158; ^1H NMR (400 MHz; $CDCl_3$) δ = 1.26 (3H, t, *J* = 7.0 Hz, OCH_2CH_3), 1.19-1.34, 1.69-1.85, 1.92-2.12 and 2.15-2.30 (10H, m, H-5, H-6, H-7, H-8 and H-9), 1.47-1.65 (2H, m, $NCH_2CH_2CH_2Ph$), 2.48-2.85 (8H, m, H_A-2, H-3, H-4, $NCH_2CH_2CH_2Ph$, $NCH_2CH_2CH_2Ph$), 3.18-3.24 (1H, m, H_B-2), 4.09-4.17 (2H, m, OCH_2CH_3) and 7.13-7.31 (5H, m, Ar-H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 14.2 (OCH_2CH_3), 26.8 ($NCH_2CH_2CH_2Ph$), 27.0, 30.8, 31.8, 32.5 and 32.5 (C-5, C-6, C-7, C-8 and C-9), 33.3 and 36.1 (C-4 and $NCH_2CH_2CH_2Ph$), 36.1 (C-3), 49.6 (C-2), 50.4 ($NCH_2CH_2CH_2Ph$), 60.3 (OCH_2CH_3), 115.1 (C-4a), 125.7 (Ar-CH), 128.3 (2xArCH), 142.1 (C-9a), 143.5 (Ar-C), 174.9 (COO); HRMS (ESI): *m/z* = $[MH^+]$ $C_{22}H_{34}NO_2$ requires 344.2584; found 344.2578.

4.2.10 (3S)-Ethyl 1-((R)-1-phenylethyl)-2,3,4,5,6,7,8,9-octahydro-1H-cyclohepta[b]pyridine-3-carboxylate **6j**. Using general method A (*R*)-1-phenylethylamine **5c** (0.670 mL, 5.2 mmol) and cycloheptanone **4c** (0.306 mL, 2.6 mmol) after purification by flash chromatography (33% ethyl acetate in *n*-hexanes) gave the *title compound* **6j** (0.545 g, 64%) as a bright yellow oil. $[\alpha]_D^{20}$ + 41 (*c* 1.0, $CHCl_3$); R_F = 0.6 (3:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3007, 2921, 2848, 1726, 1448, 1377, 1178, 1027; ^1H NMR (400 MHz; $CDCl_3$) δ = 1.21 (3H, t, *J* = 6.8 Hz, OCH_2CH_3), 1.44 (3H, d, *J* = 6.8 Hz, NCH(CH_3)Ph), 1.62-1.79, 2.20-2.24, 2.25-2.33 and 2.38-2.47 (10H, m, H-5, H-6, H-7, H-8 and H-9), 2.57-2.63 (3H, m, H_A-2 and H-3), 3.03-3.07 (1H, m, H_B-2), 4.07-4.22 (2H, m, OCH_2CH_3), 4.64 (1H, q, *J* = 7.0 Hz, NCH(CH_3)Ph), 7.19-7.48 (5H, m, Ar-H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 14.1 (OCH_2CH_3), 15.5 (NCH(CH_3)Ph), 26.7, 27.4, 30.8, 32.3 and 32.5 (C-5, C-6, C-7, C-8 and C-9), 33.9 (C-4), 39.1 (C-3), 45.5 (C-2), 54.8 (NCH(CH_3)Ph), 60.2 (OCH_2CH_3), 114.3 (C-4a), 126.5 (Ar-CH), 127.3 (Ar-CH), 128.4 (Ar-CH), 141.4 (C-9a), 143.7 (Ar-C), 175.0 (COO); HRMS (ESI) *m/z* = $[MH]^+$ $C_{21}H_{30}NO_2$ requires 328.2271; found 328.2278.

4.2.11 Ethyl 1-(3-phenylpropyl)-2,3,4,5,6,7-hexahydro-1H-cyclopenta[b]pyridine-3-carboxylate **6k**. Using general method A 3-phenylpropylamine **5b** (0.740 mL, 5.2 mmol) and cyclopentanone **4d** (0.230 mL, 2.6 mmol) after purification by flash chromatography (50% ethyl acetate in *n*-hexanes) gave the *title compound* **6k** (0.132 g, 17%) as a dark brown oil. R_F = 0.8 (1:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3018, 2938, 1727, 1496, 1454, 1397, 1189, 1029; ^1H NMR (400 MHz; $CDCl_3$) δ = 1.26 (3H, t, *J* = 8.0 Hz, OCH_2CH_3), 1.68-1.94 (4H, m, 6-CH_2 and $NCH_2CH_2CH_2Ph$), 2.20-2.35 (3H, m, H_A-7 and $NCH_2CH_2CH_2Ph$), 2.36-2.46 (3H, m, H-5 and H_B-7), 2.64-2.71 (2H, m, $NCH_2CH_2CH_2Ph$), 2.78-2.93 (1H, m, H-3), 2.96-3.04 (1H, m, H_A-2), 3.25-3.32 (1H, m, H_B-2), 4.15-4.28 (2H, m, OCH_2CH_3) and 7.18-7.39 (5H, m, Ar-H); ^{13}C NMR (100 MHz, $CDCl_3$) δ = 14.2 (OCH_2CH_3), 20.9 (C-6), 27.0 (C-4), 29.4 ($NCH_2CH_2CH_2Ph$), 31.0 (C-5), 33.2 ($NCH_2CH_2CH_2Ph$), 34.0 (C-7), 39.4 (C-3), 49.5 (C-2), 51.3 ($NCH_2CH_2CH_2Ph$), 60.4 (OCH_2CH_3), 106.5 (C-4a), 125.8 (Ar-CH), 128.2 (Ar-CH), 128.3 (Ar-CH), 141.1 (C-7a and Ar-C) and 174.6 (COO); HRMS (EI) *m/z* = $[MH]^+$ $C_{20}H_{28}NO_2$ requires 314.2215; found 314.2112.

4.2.12 (3S)-Ethyl 1-((R)-1-phenylethyl)-2,3,4,5,6,7-hexahydro-1H-cyclopenta[b]pyridine-3-carboxylate **6l**. Using general method A (*R*)-1-phenylethylamine **5c** (0.670 mL, 5.2 mmol) and cyclopentanone **4a** (0.230 mL, 2.6 mmol) after purification by flash chromatography (50% ethyl acetate in *n*-hexanes) gave the *title compound* **6l** (0.11 g, 14%) as a brown oil. $[\alpha]_D^{20}$ +39 (*c* 1.0, $CHCl_3$); R_F = 0.65 (1:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 2955, 1727, 1636, 1449, 1371, 1177, 1027; δ_H (400 MHz; $CDCl_3$) 1.18 (3H, t, *J* = 6.7 Hz, OCH_2CH_3), 1.44 (3H, d, *J* = 7.0 Hz, $NCH(CH_3)Ph$), 1.86-1.99 (2H, m, H-6), 2.17-2.27 (2H, m, H-4), 2.28-2.34 (2H, m, H-7), 2.63-2.71 (1H, m, H-3), 2.72-2.80 (1H, m, H_A-2), 2.77-2.86 (2H, m, H-5), 3.08-3.15 (1H, m, H_B-2), 4.04-4.17 (2H, m, OCH_2CH_3), 4.57-4.65 (1H, m, $NCH(CH_3)Ph$), 7.18-7.52 (5H, m, Ar-H); δ_C (100 MHz, $CDCl_3$) 14.1 (OCH_2CH_3), 16.1 ($NCH(CH_3)Ph$), 20.9 (C-6), 27.0 (C-4), 31.4 (C-5), 34.3 (C-7), 39.6 (C-3), 44.5 (C-2), 56.2 ($NCH(CH_3)Ph$), 60.3 (OCH_2CH_3), 106.5 (C-4a), 126.7 (Ar-CH), 127.3 (Ar-CH), 128.2 (Ar-CH), 141.0 (Ar-C), 142.7 (C-7a), 174.8 (COO); HRMS (EI+) *m/z* = $[MH]^+$ $C_{19}H_{26}NO_2$ requires 300.1958; found 300.1965.

4.3 General Method B: Hydrogenation of octahydroquinolines 6 to decahydroquinolines 7. To a solution of octahydroquinoline **6** (1.0 mmol) in ethyl acetate (5.0 mL) was added platinum oxide (0.04 g, 0.17 mmol) and the resulting mixture was stirred under hydrogen (1 atm) for 18 h. The mixture was filtered through Celite which was washed with ethyl acetate (20 mL) and the volatile solvents were removed *in vacuo* to give the crude product which was purified by chromatography on basic alumina to give the desired decahydroquinoline **7**.

4.3.1 (3S,4aR*,8aR*)-Ethyl 1-benzyldecahydroquinoline-3-carboxylate* **7a**. Using general method B octahydroquinline **6a** (0.415 g, 1.4 mmol) after purification by chromatography on basic alumina (2% ethyl acetate in *n*-hexanes) gave *title compound* **7a** (0.227 g, 54%) as a pale yellow oil. R_F = 0.70 (4:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 2927, 2836, 1727, 1660, 1176, 1027; δ_H (300 MHz; $CDCl_3$) 1.08-1.14 (1H, m, H_A-8), 1.21 (3H, t, *J* = 10.3 Hz, OCH_2CH_3), 1.31-1.39 (2H, m, H-6), 1.45-1.71 (5H, m, H_A-4, H-5, H-7), 1.72-1.92 (2H, m, H_B-4, H_B-8), 1.94-2.10 (1H, m, H-4a), 2.51-2.66 (2H, m, H_A-2, H-3), 2.67-2.80 (2H, m, H_B-2, H-8a), 3.57-3.62 (1H, m, NCH_ACH_BPh), 3.71-3.76 (1H, m, NCH_ACH_BPh), 4.10 (2H, q, *J* = 7.0 Hz, OCH_2CH_3) 7.16-7.31 (5H, m, Ar-H); δ_C (75.5 MHz; $CDCl_3$) 14.2 (OCH_2CH_3), 18.1 (C-7), 21.0 (C-6), 25.5 (C-8), 27.3 (C-4), 31.4 (C-5), 34.7 (C-4a), 42.3 (C-3), 47.0 (C-2), 58.4 (NCH_2Ph), 58.9 (C-8a), 60.1 (OCH_2CH_3), 126.7 (Ar-CH), 128.1 (Ar-CH), 128.4 (Ar-CH), 139.8 (Ar-C), 174.7 (COO); HRMS (EI+) *m/z* = $[M]^+$ $C_{19}H_{27}NO_2$ requires 301.20418; found 301.20339.

4.3.2 (3S,4aR*,8aR*)-Ethyl 1-(3-phenylpropyl)decahydroquinoline-3-carboxylate* **7b**. Using general method B octahydroquinline **6e** (0.350 g, 1.07 mmol) after purification by chromatography on basic alumina (2% ethyl acetate in *n*-hexanes) gave *title compound* **7b** (0.149 g, 41%) as a pale yellow oil. R_F = 0.75 (4:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 2928, 2861, 1727, 1451, 1369, 1247, 1155, 1031; δ_H (300 MHz; $CDCl_3$) 1.10-1.97 (1H, m, H_A-8), 1.20 (3H, t, *J* = 7.1 Hz, OCH_2CH_3), 1.28-1.41 (2H, m, H-6), 1.43-1.50 (2H, m, H-7), 1.51-1.58 (2H, m, H-5), 1.61-1.73 (2H, m, H-4), 1.74-1.76 (1H, m, H_B-8), 1.79-1.87 (2H, m, $NCH_2CH_2CH_2Ph$), 1.94-2.01 (1H, m, H-4a), 2.45-2.53 (3H, m, H_A-2, $NCH_2CH_2CH_2Ph$), 2.65 (2H, t, *J* = 7.6 Hz, $NCH_2CH_2CH_2Ph$), 2.55-2.67 (1H, m, H-3), 2.68-2.73 (1H, m, H-8a), 2.78 (1H, dd, *J* = 2.7, 11.2 Hz, H_B-2), 4.11 (2H, q, *J* = 7.1 Hz, OCH_2CH_3) 7.14-7.29 (5H, m, Ar-H); δ_C (75.5 MHz; $CDCl_3$) 14.0 (OCH_2CH_3), 17.3 (C-7), 20.2 (C-6), 25.3 (C-8), 26.9 (C-4), 29.3 ($NCH_2CH_2CH_2Ph$), 31.2 (C-5), 33.4 ($NCH_2CH_2CH_2Ph$), 34.5 (C-4a), 42.0 (C-3), 47.2 (C-2), 53.1 ($NCH_2CH_2CH_2Ph$), 58.4 (C-8a), 59.9 (OCH_2CH_3), 125.4 (Ar-CH), 128.0 (Ar-CH), 128.1 (Ar-CH), 142.1 (Ar-C), 174.2 (COO); HRMS (EI+) *m/z* = $[M]^+$ $C_{21}H_{31}NO_2$ requires 329.2355, found 329.2353.

4.3.3 (3S,4aR,8aR)-Ethyl 1-((R)-1-phenylethyl)decahydroquinoline-3-carboxylate **7c**. Using general method B octahydroquinline **6f** (0.323 g, 1.03 mmol) after purification by chromatography on basic alumina (2% ethyl acetate in *n*-hexanes) gave *title compound* **7c** (0.235 g, 72%) as a yellow oil. $[\alpha]_D^{20}$ +45 (*c* 1.0, $CHCl_3$); R_F = 0.75 (1:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 2973, 2930, 2870, 1720, 1449, 1367, 1324, 1186, 1153, 1029; δ_H (400 MHz; $CDCl_3$), 1.14-1.22 (1H, m, H_A-8), 1.9 (3H, t, *J* = 7.2 Hz, OCH_2CH_3), 1.27-1.30 (3H, m, NCH(CH_3)Ph), 1.32-1.46 (2H, m, H-6), 1.43-1.77 (6H, m, H-4, H-5, H-7), 1.79-1.86 (1H, m, H-4a), 2.00-2.08 (1H, m, H_B-8), 2.40-2.53 (2H, m, H_A-2, H-3), 2.64 (1H, d, *J* = 5.6 Hz, H_B-2), 3.05 (1H, dt, *J* = 3.5, 12.0 Hz, H-8a), 3.66 (1H, q, *J* = 6.4 Hz, NC*H*(CH_3)Ph), 4.01-4.05 (2H, m, OCH_2CH_3), 7.21-7.35 (5H, m, Ar-H); δ_C (100 MHz; $CDCl_3$) 14.1 (OCH_2CH_3), 18.0 (NCH(CH_3)Ph), 21.0 (C-7), 22.2 (C-6), 25.6 (C-8), 27.6 (C-4), 31.6 (C-5), 34.7 (C-4a), 42.3 (C-3), 45.4 (C-2), 55.1 (NCH(CH_3)Ph), 60.0 (C-8a), 60.4 (OCH_2CH_3), 126.5 (Ar-CH), 126.9 (Ar-CH), 128.3 (Ar-CH), 147.1 (Ar-C), 174.8 (COO); HRMS (EI+) *m/z* = $[M]^+$ $C_{20}H_{29}NO_2$ requires 315.21983; found 315.21981.

4.3.4 (3S,4aR*,9aR*)-Ethyl 1-benzyldecahydro-1H-cyclohepta[b]pyridine-3-carboxylate* **7d**. Using general method B octahydroquinline **6c** (0.600 g, 1.91 mmol) after purification by chromatography on basic alumina (2% ethyl acetate in *n*-hexanes) gave *title compound* **7d** (0.357 g, 58%) as a yellow oil. R_F = 0.7 (4:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 2923, 2853, 1728, 1454, 1255, 1148; δ_H (400 MHz; $CDCl_3$) 0.97-1.08 (1H, m, H_A-5), 1.02-1.15 (1H, m, H_A-4), 1.11-1.22 (1H, m, H_A-6 or H_A-7), 1.22-1.32 (1H, m, H_A-8), 1.23 (3H, t, *J* = 7.1 Hz, OCH_2CH_3), 1.34-1.47 (2H, m, H_B-6- or H_B-7 and H_A-9), 1.52-1.60 (1H, m, H_B-8), 1.64-1.73 (1H, m, H_B-9), 1.73-1.86 (3H, m, H_B-4 and H-6 or H-7), 1.88-1.97 (1H, m, H_B-5), 2.37-2.48 (1H, m, H_A-2), 2.54-2.61 (1H, m, H-3), 2.65-2.73 (1H, m, H_B-2), 2.69-2.84 (1H, m, H-9a), 3.59-3.70 (2H, m, NCH_2Ph), 4.03-4.13 (2H, m, OCH_2CH_3) 7.14-7.37 (5H, m, Ar-H); δ_C (100 MHz, $CDCl_3$) 14.2 (OCH_2CH_3), 20.2 (C-9), 23.3 (C-8), 28.1 (C-4), 31.0, 31.1 (C-6, C-7), 33.5 (C-5), 36.8 (C-4a), 42.3 (C-3), 47.7 (C-2), 58.9 (NCH_2Ph), 60.1 (OCH_2CH_3), 62.2 (C-9a), 126.7 (Ar-CH), 128.1 (Ar-CH), 128.3 (Ar-CH), 139.7 (Ar-C), 174.6 (COO); HRMS (EI+) *m/z* = $[MH]^+$ $C_{20}H_{30}NO_2$ requires 316.2271; found 316.2262.

4.3.5 (3S,4aR*,9aR*)-Ethyl 1-(3-phenylpropyl)decahydro-1H-cyclohepta[b]pyridine-3-carboxylate* **7e**. Using general method B octahydroquinline **6i** (0.350 g, 1.02 mmol) after purification by chromatography on basic alumina (2% ethyl acetate in *n*-hexanes) gave *title compound* **7e** (0.188 g, 54%) a yellow oil; R_F = 0.6 (3:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 2931, 2850, 1721, 1451, 1247, 1155, 1031; δ_H (400 MHz; $CDCl_3$) 0.96-1.07 (1H, m, H_A-5), 1.11-1.20 (2H, m, H_A-4 and H_A-6 or H_A-7), 1.23 (3H, t, *J* = 7.2 Hz, OCH_2CH_3), 1.29-1.40 (3H, m, H_A-8, H_A-9 and H_A-6 or H_A-7), 1.51-1.65 (2H, m, H_B-8, H_B-9), 1.73-1.85 (4H, m, $NCH_2CH_2CH_2Ph$, H_B-6, H_B-7), 1.90-2.02 (2H, m, H-4a, H_B-5), 2.32 (1H, t, *J* = 12.1 Hz, H_A-2), 2.48 (1H, td, *J* = 2.2, 7.4 Hz, $NCH_2CH_2CH_2Ph$), 2.53-2.59 (1H, m, H-3), 2.63 (2H, t, *J* = 7.4 Hz, $NCH_2CH_2CH_2Ph$), 2.73-2.77 (1H, m, H_B-2), 2.78-2.82 (1H, m, H-9a), 4.06-4.12 (2H, m, OCH_2CH_3), 7.13-7.29 (5H, m, Ar-H); δ_C (100 MHz, $CDCl_3$) 14.1 (OCH_2CH_3), 19.6 (C-9), 23.1 (C-8), 28.1 (C-4), 29.4 ($NCH_2CH_2CH_2Ph$), 30.8, 31.0 (C-6, C-7), 33.4, 33.5 (C-5, $NCH_2CH_2CH_2Ph$), 36.4 (C-4a), 42.0 (C-3), 48.1 (C-2), 53.6 ($NCH_2CH_2CH_2Ph$), 60.0 (OCH_2CH_3), 61.8 (C-9a), 125.5 (Ar-CH), 128.1 (Ar-CH), 128.3 (Ar-CH), 142.2 (Ar-C), 174.4 (COO); HRMS (EI+) *m/z* = $[MH]^+$ $C_{22}H_{34}NO_2$ requires 344.2584; found 344.2578.

4.3.6 (3S,4aR,9aR)-Ethyl 1-((R)-1-phenylethyl)decahydro-1H-cyclohepta[b]pyridine-3-carboxylate **7f**. Using general method B octahydroquinline **6j** (0.236 g, 0.721 mmol) after purification by chromatography on basic alumina (2% ethyl acetate in *n*-hexanes) gave *title compound* **7f** (0.123 g, 52%) as a pale yellow oil. $[\alpha]_D^{20}$ +68 (*c* 1.0, $CHCl_3$); R_F = 0.55 (3:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 2934, 2851, 1725, 1441, 1257, 1130; δ_H (400 MHz; $CDCl_3$) 1.00-1.05 (1H, m, H_A-5), 1.16 (3H, t, *J* = 7.1 Hz, OCH_2CH_3), 1.18-1.22 (2H, m, H_A-4 and H_A-6 or H_A-7), 1.25 (3H, d, *J* = 6.7 Hz, NCH(CH_3)Ph), 1.27-1.33 (1H, m, H_A-8), 1.34-1.41 (1H, m, H_A-6 or H_A-7), 1.56-1.63 (3H, m, H_B-8 and H-9), 1.75-1.84 (3H, m, H_B-4, H_B-6, H_B-7), 1.93-2.07 (1H, m, H_A-2), 2.39-2.45 (1H, m, H-3), 2.55-2.61 (1H, m, H_B-2), 3.15 (1H, q, *J* = 5.0 Hz, NC*H*(CH_3)Ph), 3.57-3.63 (1H, m, H-9a), 4.00 (2H, q, *J* = 4.0 Hz, OCH_2CH_3), 7.16-7.37 (5H, m, Ar-H); δ_C (100 MHz, $CDCl_3$) 14.1 (OCH_2CH_3), 20.3 (C-9), 22.5 (NCH(CH_3)Ph), 23.3 (C-8), 27.8 (C-4), 31.3, 31.7 (C-6, C-7), 33.9 (C-5), 36.6 (C-4a), 42.1 (C-3), 46.3 (C-2), 57.7 (NCH(CH_3)Ph), 60.0 (OCH_2CH_3), 61.4 (C-9a), 126.6 (Ar-CH), 127.4 (Ar-CH), 128.3 (Ar-CH), 147.4 (Ar-C), 174.8 (COO); HRMS (EI+) *m/z* = $[MH]^+$ $C_{21}H_{32}NO_2$ requires 330.2480; found 330.2483.

4.3.7 (3S,4aS*,8aR*)-Ethyl 1-benzyl-5,7-dimethyldecahydroquinoline-3-carboxylate* **7g**. Using general method B octahydroquinline **6b** (0.215 g, 0.67 mmol) after purification by chromatography on basic alumina (2% ethyl acetate in *n*-hexanes) gave *title compound* **7g** (0.091 g, 42%) as a pale yellow oil. R_F = 0.8 (4:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 2968, 2950, 2855, 1714, 1495, 1455, 1368, 1239, 1200, 1160, 1064; δ_H (400 MHz; $CDCl_3$) 0.67-0.77 (1H, m, H_A-6), 0.81 (3H, t, *J* = 6.6 Hz, 5-CH_3), 0.89 (3H, t, *J* = 6.6 Hz, 7-CH_3), 0.99-1.09 (1H, m, H_A-8), 1.18 (3H, t, *J* = 7.2 Hz, OCH_2CH_3), 1.25-1.33 (1H, m, H-4a), 1.42-1.51 (1H, m, H_A-4), 1.72-1.80 (1H, m, H_B-6), 1.84-2.00 (2H, m, H-5 and H_A-2), 2.12-2.23 (3H, m, H_B-4, H-7 and H_B-8), 2.35-2.41 (1H, m, H-8a), 2.59-2.69 (1H, m, H-3), 2.91 (1H, d, *J* = 13.3 Hz, NCH_AH_BPh), 2.95-3.00 (1H, m, H_B-2), 4.00-4.08 (2H, m, OCH_2CH_3), 4.11 (1H, d, *J* = 13.6 Hz, NCH_AH_BPh), 7.19-7.34 (5H, m, Ar-H); δ_C (100 MHz, $CDCl_3$) 14.1 (OCH_2CH_3), 19.7 (7-CH_3), 22.6 (5-CH_3), 26.2 (C-5), 28.5 (C-7), 30.3 (C-4), 37.6 (C-4a), 38.7 (C-8), 43.6 (C-3), 45.2 (C-6), 55.2 (C-2), 56.7 (NCH_2Ph), 60.1 (OCH_2CH_3), 61.7 (C-8a), 126.6 (Ar-CH), 127.8 (Ar-CH), 128.6 (Ar-CH), 140.1 (Ar-C), 174.9 (COO); HRMS (EI+) *m/z* = $[MH]^+$ $C_{21}H_{32}NO_2$ requires 330.2428; found 330.2422.

4.3.8 (3S,4aS*,8aR*)-Ethyl 5,7-dimethyl-1-(3-phenylpropyl)decahydroquinoline-3-carboxylate* **7h**. Using general method B octahydroquinline **6g** (0.400 g, 1.13 mmol) after purification by chromatography on basic alumina (2% ethyl acetate in *n*-hexanes) gave *title compound* **7h** (0.174 g, 43%) as a pale yellow oil. R_F = 0.7 (3:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 2994, 2866, 1730, 1453, 1182, 1153; δ_H (400 MHz; $CDCl_3$) 0.58-0.70 (1H, m, H_A-6), 0.77 (3H, d, *J* = 6.5 Hz, 5-CH_3), 0.84 (3H, d, *J* = 6.5 Hz, 7-CH_3), 0.83-0.94 (1H, m, H_A-8), 1.14-1.22 (1H, m, H-3), 1.24 (3H, t, *J* = 7.1 Hz, OCH_2CH_3), 1.39 (1H, td, *J* = 4.6, 13.3 Hz, $NCH_2CH_AH_BCH_2Ph$), 1.60-1.90 (5H, m, H-4, H-5, H_B-6, H_B-8), 1.91-2.01 (1H, m, H-7), 2.12-2.20 (1H, m, $NCH_2CH_AH_BCH_2Ph$), 2.23 (1H, t, *J* = 11.3 Hz, $NCH_AH_BCH_2CH_2Ph$), 2.28-2.33 (1H, m, H-8a), 2.34-2.44 (1H, m, H_A-2), 2.47-2.71 (4H, m, H_B-2, H-4a, $NCH_2CH_2CH_2Ph$), 3.07-3.14 (1H, m, $NCH_AH_BCH_2CH_2Ph$), 4.10 (2H, q, *J* = 7.1 Hz, OCH_2CH_3), 7.12-7.32 (5H, m, Ar-CH); δ_C (100 MHz, $CDCl_3$) 14.2 (OCH_2CH_3), 19.7 (7-CH_3), 22.5 (5-CH_3), 25.4 (C-4), 26.3 (C-5), 28.4 (C-7), 30.0 ($NCH_2CH_2CH_2Ph$), 33.8 ($NCH_2CH_2CH_2Ph$), 37.8 (C-4a), 38.2 (C-8), 43.2 (C-3), 45.0 (C-6), 52.0 (C-2), 55.1 ($NCH_2CH_2CH_2Ph$), 60.0 (C-8a), 60.1 (OCH_2CH_3), 125.7 (CH, Par-CH), 128.2 (Ar-CH), 128.3 (Ar-CH), 142.3 (Ar-C), 174.9 (COO); HRMS (EI+) *m/z* = $[MH]^+$ $C_{23}H_{36}NO_2$ requires 358.2741; found 358.2748.

4.4 General Method C: Reduction of esters 7 to alcohols 8. To a solution of lithium aluminium hydride (3.0 mmol) in dry THF (2.0 mL) was added dropwise a solution of ester **7** (1.0 mmol) in dry THF (8.0 mL) and the mixture was stirred for 15 min. The reaction was quenched by the dropwise addition of 5.2 M potassium hydroxide (1.2 mL) and stirring continued for 15 min. The resultant mixture was filtered through Celite and washed with ethyl acetate (40 mL). The volatile solvents were removed *in vacuo* to give the desired alcohol **8**, which was used without further purification.

4.4.1 ((3S,4aR*,8aR*)-1-Benzyldecahydroquinolin-3-yl)methanol* **8a**. Using general method C ester **7a** (0.277 g, 0.964 mmol) gave the *title compound* **8a** (0.195 g, quant.) as a pale yellow oil, which was used without further purification. R_F = 0.2 (1:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3352, 3027, 2920, 2852, 1494, 1451, 1369, 1069, 1036, 735, 700; δ_H (400 MHz; $CDCl_3$) 1.02-1.18 (1H, m, H_A-7), 1.23-1.29 (2H, m, H-6), 1.29-1.39 (2H, m, H-4), 1.48-1.64 (4H, m, H-5, H-8), 1.70-1.77 (1H, m, H_B-7), 1.81-1.92 (1H, m, H-3), 2.01-2.08 (1H, m, H-4a), 2.15-2.21 (1H, m, H_A-2), 2.63 (1H, d, *J* = 11.4 Hz, H_B-2), 2.72-2.82 (1H, m, H-8a), 3.42-3.45 (2H, m, CH_2OH), 3.58 (1H, dd, *J* = 2.6, 13.6 Hz, NCH_ACH_BPh), 3.73 (1H, dd, *J* = 2.6, 13.6 Hz, NCH_ACH_BPh), 7.20-7.34 (5H, m, Ar-H); δ_C (100 MHz; $CDCl_3$) 17.5 (C-8), 20.8 (C-6), 25.4 (C-7), 27.0 (C-4), 31.5 (C-5), 34.9 (C-4a), 39.0 (C-3), 48.6 (C-2), 58.4 (NCH_2Ph), 59.1 (C-8a), 66.1 (CH_2OH), 126.5 (Ar-CH), 128.1 (Ar-CH), 128.4 (Ar-CH), 139.6 (Ar-C); HRMS (EI+) *m/z* = $[M]^+$ $C_{17}H_{25}NO$ requires 258.20275; found 258.20298.

4.4.2 ((3S,4aR*,8aR*)-1-(3-Phenylpropyl)decahydroquinolin-3-yl)methanol* **8b**. Using general method C ester **7b** (0.350 g, 1.07 mmol) gave *title compound* **8b** (0.130 g, quant.) as a pale yellow oil, which was used without further purification. R_F = 0.25 (1:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3444, 3025, 2923, 2853, 1495, 1449, 1371, 1080, 1043, 730, 698; δ_H (300 MHz; $CDCl_3$) 1.10-1.20 (1H, m, H_A-7), 1.29-1.37 (2H, m, H-4), 1.39-1.42 (2H, m, H-6), 1.43-1.50 (2H, m, H-8), 1.58-1.62 (2H, m, H-5), 1.78-1.82 (1H, m, H_B-7), 1.85-1.93 (3H, m, H-3, $NCH_2CH_2CH_2Ph$), 1.94-2.08 (1H, m, H-4a), 2.12-2.19 (1H, m, H_A-2), 2.40-2.54 (2H, m, $NCH_2CH_2CH_2Ph$), 2.55-2.71 (2H, m, $NCH_2CH_2CH_2Ph$), 2.74-2.76 (1H, m, H_B-2), 2.79-2.81 (1H, m, H-8a), 3.41-3.55 (2H, m, CH_2OH) 7.22-7.35 (5H, m, Ar-H); δ_C (75.5 MHz; $CDCl_3$) 17.0 (C-8), 21.0 (C-6), 25.6 (C-7), 27.2 (C-4), 29.4 ($NCH_2CH_2CH_2Ph$), 31.7 (C-5), 33.8 ($NCH_2CH_2CH_2Ph$), 35.2 (C-4a), 39.4 (C-3), 49.5 (C-2), 53.7 ($NCH_2CH_2CH_2Ph$), 58.8 (C-8a), 66.41 (CH_2OH), 125.6 (Ar-CH), 128.2 (Ar-CH), 128.3 (Ar-CH), 142.3 (Ar-C); MS (EI): *m/z* = 287 (M^+, 32), 244 (97), 182 (100), 91 (27), 44 (21);); HRMS (EI+) *m/z* = $[MH]^+$ $C_{21}H_{29}NO_2$ $C_{19}H_{29}NO_2$ requires 287.2249; found 287.2248.

4.4.3 ((3S,4aR,8aR)-1-((R)-1-Phenylethyl)decahydroquinolin-3-yl)methanol **8c**. Using general method C ester **7c** (0.235 g, 0.740 mmol) gave **8c** (0.202 g, quant.) as a pale yellow solid, which was used without further purification. $[\alpha]_D^{20}$ +44 (*c* 1.0, $CHCl_3$); m.p. 109-110 °C; R_F = 0.15 (1:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3285, 3027, 2920, 2871, 1450, 1368, 1070, 1040, 761, 701; δ_H (400 MHz; $CDCl_3$) 1.11-1.22 (1H, m, H_A-7), 1.27 (3H, t, *J* = 7.4 Hz, NCH(C*H*$_3$)Ph), 1.30-1.43 (4H, m, H-4, H-6), 1.46-1.63 (4H, m, H-5, H-8), 1.65-1.78 (1H, m, H_B-7), 1.95-2.08 (3H, m, H_A-2, H-3, H-4a), 2.46 (1H, dd, *J* = 3.8, 11.6 Hz, H_B-2), 3.08-3.12 (1H, m, H-8a), 3.35 (2H, d, *J* = 6.0 Hz, C*H*$_2$OH), 3.61 (1H, q, *J* = 6.5 Hz, NC*H*(CH_3)Ph), 7.17-7.31 (5H, m, Ar-H); δ_C (100 MHz; $CDCl_3$) 17.6 (C-8), 21.1 (NCH(*C*H$_3$)Ph), 22.1 (C-6), 25.9 (C-7), 27.5 (C-4), 31.9 (C-5), 35.2 (C-4a), 39.3 (C-3), 47.1 (C-2), 55.6 (N*C*H(CH_3)Ph), 60.7 (C-8a), 66.6 (CH_2OH), 126.5 (Ar-CH), 127.0 (Ar-CH), 128.3 (Ar-CH), 147.4 (Ar-C); HRMS (EI+) *m/z* = $[M]^+$ $C_{18}H_{27}NO_2$ requires 273.21533; found 273.21513.

4.4.4 ((3S,4aR*,9aR*)-1-Benzyldecahydro-1H-cyclohepta[b]pyridin-3-yl)methanol* **8d**. Using general method C ester **7d** (0.147 g, 0.466 mmol) gave *title compound* **8d** (0.127 g, quant.) as a pale yellow oil, which was used without further purification. R_F = 0.1 (2:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3336, 2917, 2851, 1453, 1355, 1063, 1026; δ_H (400 MHz; $CDCl_3$) 0.93-1.06 (4H, m, H-5 and H-6 or H-7), 1.26-1.33 (1H, m, H_A-8), 1.33-1.41 (1H, m, H_A-9), 1.52-1.61 (1H, m, H_B-8), 1.54-1.61 (1H, m, H_A-6 or H_A-7), 1.64-1.71 (1H, m, H_B-9), 1.74-1.80 (1H, m, H_B-6 or H_B-7), 1.76-1.84 (2H, m, H-4), 1.80-1.89 (1H, m, H-3), 2.01-2.07 (1H, m, H_A-2), 2.02-2.11 (1H, m, H-4a), 2.55-2.62 (1H, m, H_B-2), 2.75-2.83 (1H, m, H-9a), 3.38-3.48 (2H, m, NCH_2Ph), 3.62 (2H, q, *J* = 7.6 Hz, C*H*$_2$OH), 7.18-7.44 (5H, m, Ar-H); δ_C (100 MHz, $CDCl_3$) 20.1 (C-9), 23.4 (C-8), 28.2 (C-4), 31.2, 31.3 (C-6, C-7), 33.9 (C-5), 37.1 (C-4a), 39.2 (C-3), 49.3 (C-2), 59.2 (NCH_2Ph), 62.9 (C-9a), 66.7 (CH_2OH), 126.6 (Ar-CH), 128.1 (Ar-CH), 128.5 (Ar-CH), 140.3 (Ar-C);); HRMS (EI+) *m/z* = $[MH]^+$ $C_{18}H_{28}NO$ requires 274.2165; found 247.2162.

4.4.5 ((3S,4aR*,9aR*)-1-(3-Phenylpropyl)decahydro-1H-cyclohepta[b]pyridin-3-yl)methanol* **8e**. Using general method C ester **7e** (0.160 g, 0.465 mmol) gave *title compound* **8e** (0.125 g, quant.) as a yellow oil, which was used without further purification. R_F = 0.3 (1:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3344, 2920, 2852, 1453, 1373, 1105, 1029; δ_H (400 MHz; $CDCl_3$) 0.88-1.02 (3H, m, H_A-5, and H-6 or H-7), 1.10-1.20 (1H, m, H_A-4), 1.22-1.38 (3H, m, H_B-4, H_A-8, H_A-9), 1.48-1.62 (4H, m, H_B-8, H_B-9 and H-6 or H-7), 1.73-1.84, 1.73-1.84 (3H, m, H-3, NCH_2C*H*$_2$$CH_2$Ph), 1.88-2.02 (3H, m, H_A-2, H-4a, H_B-5), 2.46 (2H, t, *J* = 7.7 Hz, NC*H*$_2$$CH_2CH_2$Ph), 2.58-2.68 (3H, m, H_B-2, NCH_2CH_2C*H*$_2$Ph), 2.79-2.86 (1H, m, H-9a), 3.35-3.50 (2H, m, C*H*$_2$OH), 7.14-7.31 (5H, m, Ar-H); δ_C (100 MHz, $CDCl_3$) 19.3 (C-9), 23.3 (C-8), 28.3 (C-4), 29.5 (NCH_2*C*H$_2$$CH_2$Ph), 31.1, 31.3 (C-6, C-7), 33.8 (C-5, NCH_2CH_2*C*H$_2$Ph), 37.0 (C-4a), 39.1 (C-3), 50.0 (C-2), 54.1 (N*C*H$_2$$CH_2CH_2$Ph), 62.2 (C-9a), 66.5 ($CH_2$OH), 125.6 (Ar-CH), 128.2 (Ar-CH), 128.4 (Ar-CH), 142.4 (Ar-C); HRMS (EI+) *m/z* = $[MH]^+$ $C_{20}H_{32}NO$ requires 302.2478; found 302.2483.

4.4.6 ((3S,4aR,9aR)-1-((R)-1-Phenylethyl)decahydro-1H-cyclohepta[b]pyridin-3-yl)methanol **8f**. To Using general method C ester **7f** (0.100 g, 0.30 mmol) gave *title compound* **8f** (0.086 g, quant.) as a pale yellow oil, which was used without further purification. $[\alpha]_D^{20}$ +72 (*c* 1.0, $CHCl_3$); R_F = 0.2 (1:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3331, 2929, 2842, 1451, 1347, 1063, 1011; δ_H (400 MHz; $CDCl_3$) 0.94-1.09 (2H, m, H_A-5 and H_A-6 or H_A-7), 1.23-1.31 (4H, m, H_A-4, NCH(C*H*$_3$)Ph), 1.36-1.45 (2H, m, H_A-8, H_A-9), 1.53-1.71 (4H, m, H-3, H_B-8, H_B-9 and H_B-6 or H_B-7), 1.78-1.89 (4H, m, H_A-2, H_B-4, and H-6 or H-7), 1.94-2.02 (1H, m, H_B-5), 2.04-2.11 (1H, m, H-4a), 2.41-2.47 (1H, m, H_B-2), 3.18 (1H, q, *J* = 5.0 Hz, NC*H*(CH_3)Ph), 3.31 (2H, dd, *J* = 1.6, 6.1 Hz, C*H*$_2$OH), 3.56-3.36 (1H, m, H-9a), 7.16-7.34 (5H, m, Ar-H); δ_C (100 MHz, $CDCl_3$) 19.8 (C-9), 22.2 (NCH(C*H*$_3$)Ph), 23.4 (C-8), 27.8 (C-4), 31.3, 31.8 (C-6, C-7), 34.3 (C-5), 37.1 (C-4a), 39.0 (C-3), 47.8 (C-2), 58.1 (NC*H*(CH_3)Ph), 61.3 (C-9a), 66.6 (CH_2OH), 126.5 (Ar-CH), 127.3 (Ar-CH), 128.4 (Ar-CH), 147.6 (Ar-C); HRMS (EI+) *m/z* = $[MH]^+$ $C_{19}H_{30}NO$ requires 288.2322; found 288.2321.

4.4.7 ((3S,4aS*,8aR*)-1-Benzyl-5,7-dimethyldecahydroquinolin-3-yl)methanol* **8g**. Using general method C ester **7g** (0.08 g, 0.24 mmol) gave *title compound* **8g** (0.069 g, quant.) as a pale yellow oil, which was used without further purification. R_F = 0.18 (1:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3303, 2918, 2860, 1494, 1375, 1121, 1015; δ_H (400 MHz; $CDCl_3$) 0.65-0.76 (1H, m, H_A-6), 0.81 (3H, d, *J* = 6.7 Hz, 5-CH_3), 0.86 (3H, d, *J* = 6.7 Hz, 7-CH_3), 0.96-1.11 (2H, m, H_A-4 and H_A-8), 1.21-1.23 (1H, m, H-3), 1.46-1.54 (1H, m, H_A-2), 1.70-1.77 (1H, m, H_B-6), 1.81-1.96 (3H, m, H-4a, H_B-4, H-5), 2.12-2.22 (2H, m, H-7, H_B-8), 2.27-2.31 (1H, m, H-8a), 2.86-2.93 (2H, m, H_B-2, NC*H*$_A$$H_B$Ph), 3.21-3.32 (2H, m, C*H*$_2$OH), 4.10 (1H, d, *J* = 13.6 Hz, NCH_A*H*$_B$Ph), 7.16-7.37 (5H, m, Ar-CH); δ_C (100 MHz, $CDCl_3$) 19.6 (7-*C*H$_3$), 22.6 (5-*C*H$_3$), 26.2 (C-5), 28.8 (C-7), 30.3 (C-4), 34.0 (C-4a), 38.9 (C-8), 43.9 (C-3), 45.3 (C-6), 57.0 and 57.1 (C-2, NCH_2Ph), 62.1 (C-8a), 66.8 (CH_2OH), 126.5 (Ar-CH), 128.1 (Ar-CH), 128.6 (Ar-CH), 140.2 (Ar-C); HRMS (EI+) m/z = $[MH]^+$ $C_{19}H_{30}NO$ requires 288.2322; found 288.2327.

4.4.8 ((3S,4aS*,8aR*)-5,7-Dimethyl-1-(3-phenylpropyl)decahydroquinolin-3-yl)methanol* **8h**. Using general method C ester **7h** (0.084 g, 0.24 mmol) gave *title compound* **8h** (0.072 g, quant.) as a pale yellow oil, which was used without further purification. R_F = 0.25 (1:1 *n*-hexanes, ethyl acetate); ν_{max}/cm^{-1} 3318, 2918, 2868, 1453, 1375, 1114, 1076, 1038; δ_H (400 MHz; $CDCl_3$) 0.56-0.66 (1H, m, H_A-6), 0.78 (3H, d, *J* = 6.5 Hz, 5-CH_3), 0.82 (3H, d, *J* = 6.5 Hz, 7-CH_3), 0.83-0.94 (2H, m, H_A-8, $NCH_2CH_AH_BCH_2Ph$), 1.11-1.19 (1H, m, H-3), 1.62-1.91 (7H, m, H-4, H-4a, H-5, H_B-8, $NCH_AH_BCH_2CH_2Ph$, $NCH_2CH_AH_BCH_2Ph$), 1.94-2.03 (1H, m, H-7), 2.25-2.30 (1H, m, H-8a), 2.37-2.70 (4H, m, H-2, $NCH_2CH_2CH_2Ph$), 3.00-3.06 (1H, m, $NCH_AH_BCH_2CH_2Ph$), 3.28-3.46 (2H, m, CH_2OH), 7.13-7.29 (5H, m, Ar-CH); δ_C (100 MHz, $CDCl_3$) 19.7 (7-CH_3), 22.5 (5-CH_3), 25.0 (C-4), 26.3 (C-5), 28.7 (C-7), 30.1 ($NCH_2CH_2CH_2Ph$), 33.8 ($NCH_2CH_2CH_2Ph$), 34.4 (C-4a), 38.2 (C-8), 43.5 (C-3), 45.0 (C-6), 52.4 (C-2), 57.0 ($NCH_2CH_2CH_2Ph$), 60.5 (C-8a), 66.9 (CH_2OH), 125.6 (Ar-CH), 128.2 (Ar-CH), 128.3 (Ar-CH), 142.3 (Ar-C); HRMS (EI+) m/z = $[MH]^+$ $C_{21}H_{34}NO$ requires 316.2635; found 316.2647.

4.5 General Method D: Preparation of anthranilate esters 10. To a solution of alcohol **8** (1.0 mmol) in dry dichloromethane (15 mL) was added acid **9** (2.0 mmol), DMAP (0.1 mmol) and DCC (2.0 mmol) and the mixture was stirred for 18 h. The mixture was filtered through Celite and washed with ethyl acetate (90 mL). The filtered mixture was washed with aqueous $NaHCO_3$ (2 × 90 mL), dried (Na_2SO_4) and the volatile solvents were removed *in vacuo* to give the crude product which was purified by flash column chromatography to give the desired anthranilate ester **10**.

4.5.1 ((3″S,4a″R*,8a″R*)-1″-Benzyldecahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxo-2′,5′-dihydro-1H-pyrrol-1′-yl)benzoate* **10a**. Using general method D alcohol **8a** (0.080 g, 0.310 mmol) after purification by flash chromatography (20% *n*-hexanes in ethyl acetate) gave *title compound* **10a** (0.077 g, 53%) as a green oil. R_F = 0.7 (4:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 3025, 2929, 1727, 1714, 1602, 1494, 1454, 1393, 1292, 1259, 1108; δ_H (400 MHz; $CDCl_3$) 1.04-1.14 (1H, m, H_A-7″), 1.26-1.31 (2H, m, H-6″), 1.34-1.43 (2H, m, H-4″), 1.46-1.61 (4H, m, H-5″, H-8″), 1.69-1.79 (1H, m, H_B-7″), 1.87-1.94 (1H, m, H-3″), 1.97-2.10 (4H, m, H-4a″, 3′-CH_3), 2.22 (1H, t, *J* = 11.2 Hz, H_A-2″), 2.58 (1H, dd, *J* = 3.2, 11.2 Hz, H_B-2″), 2.73-2.78 (1H, m, H-8a″), 3.58 (1H, d, *J* = 13.6 Hz, NCH_AH_BPh), 3.73 (1H, d, *J* = 13.6 Hz, NCH_AH_BPh), 4.01-4.14 (2H, m, CH_2O), 6.45 (1H, s, H-4′), 7.21-7.34 (6H, m, H-6, Ar-H), 7.44 (1H, t, *J* = 8.0 Hz, H-5), 7.61 (1H, t, *J* = 8.0 Hz, H-4), 7.95 (1H, d, *J* = 8.0 Hz, H-3); δ_C (100 MHz; $CDCl_3$) 11.1 (3′-CH_3), 17.6 (C-8″), 20.94 (C-6″), 25.4 (C-7″), 27.3 (C-4″), 31.5 (C-5″), 35.0 (C-4a″), 36.1 (C-3″), 48.4 (C-2″), 58.4 (NCH_2Ph), 58.9 (C-8a″), 68.3 (CH_2O), 126.6 (Ar-CH), 127.8 (C-4′), 128.0 (C-1), 128.1 (Ar-CH), 128.5 (Ar-CH), 128.8 (C-5), 130.2 (C-6), 131.4 (C-3), 131.6 (C-2), 133.1 (C-4), 139.7 (Ar-C), 146.1 (C-3′), 164.7 (COO), 169.64 (C-2′), 170.7 (C-5′); HRMS (EI+) m/z = $[M]^+$ $C_{29}H_{32}N_2O_4$ requires 427.23621; found 427.23547.

4.5.2 ((3″S,4a″R*,8a″R*)-1″-(3-Phenylpropyl)decahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxo-2′,5′-dihydro-1H-pyrrol-1′-yl)* **10b**. Using general method D alcohol **8b** (0.112 g, 0.390 mmol) after purification by flash chromatography (20% *n*-hexanes in ethyl acetate) gave *title compound* **10b** (0.180 g, 95%) as a dark green oil. R_F = 0.65 (4:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 3028, 2927, 1727, 1715, 1600, 1494, 1398, 1290, 1106; δ_H (400 MHz; $CDCl_3$) 1.03-1.1.17 (1H, m, H_A-7″), 1.29-1.40 (4H, m, H-4″, H-6″), 1.41-1.50 (2H, m, H-8″), 1.54-1.59 (2H, m, H-5″), 1.68-1.84 (3H, m, H_B-7″, $NCH_2CH_2CH_2Ph$), 1.98-2.09 (2H, m, H-3″, H-4a″), 2.10-2.20 (4H, m, H_A-2″, 3′-CH_3), 2.44-2.57 (2H, m, $NCH_2CH_2CH_2Ph$), 2.61-2.65 (3H, m, H_B-2″, $NCH_2CH_2CH_2Ph$), 2.76-2.80 (1H, m, H-8a″), 4.04-4.21 (2H, m, CH_2O), 6.48 (1H, t, *J* = 1.7 Hz, H-4′), 7.15-7.30 (6H, m, H-6, Ar-H), 7.49 (1H, dt, *J* = 1.2, 7.8 Hz, H-5), 7.61 (1H, dt, *J* = 1.2, 7.8 Hz, H-4), 8.07 (1H, dd, *J* = 1.2, 7.8 Hz, H-3); δ_C (100 MHz; $CDCl_3$) 11.1 (3′-CH_3), 16.9 (C-8″), 20.9 (C-6″), 25.5 (C-7″), 27.3 (C-4″), 29.4 ($NCH_2CH_2CH_2Ph$), 31.5 (C-5″), 33.7 ($NCH_2CH_2CH_2Ph$), 35.1 (C-4a″), 36.1 (C-3″), 49.1 (C-2″), 53.4 ($NCH_2CH_2CH_2Ph$), 58.5 (C-8a″), 68.4 (CH_2O), 125.6 (Ar-CH), 127.9 (C-4′), 128.1 (C-1), 128.2 (Ar-CH), 128.3 (Ar-CH), 128.9 (C-5), 130.3 (C-6), 131.5 (C-3), 131.6 (C-2), 133.1 (C-4), 142.3 (Ar-C), 146.2 (C-3′), 164.8 (COO), 169.7 (C-2′), 170.7 (C-5′); HRMS (EI+) m/z = $[M]^+$ $C_{31}H_{36}N_2O_4$ requires 500.26751; found 500.26752.

4.5.3 ((3″S,4a″R,8a″R)-1″-((R)-1-Phenylethyl)decahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxo-2′,5′-dihydro-1H-pyrrol-1′-yl)benzoate **10c**. Using general method D alcohol **8c** (0.100 g, 0.360 mmol) after purification by flash chromatography (20% *n*-hexanes in ethyl acetate) gave *title compound* **10c** (0.121 g, 70%) as a green oil. $[\alpha]_D^{20}$ +46 (*c* 1.0, $CHCl_3$); R_F = 0.5 (4:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2931, 2852, 1710, 1602, 1492, 1452, 1394, 1244, 1208, 1109, 1108; δ_H (400 MHz; $CDCl_3$) 1.01-1.19 (1H, m, H_A-7″), 1.22-1.26 (3H, m, NCH(C*H*$_3$)Ph), 1.29-1.44 (4H, m, H-4″, H-6″), 1.52-1.63 (4H, m, H-5″, H-8″), 1.71-1.80 (1H, m, H_B-7″), 1.89-2.08 (3H, m, H_A-2″, H-3″, H-4a″), 2.13 (3H, s, 3′-CH_3), 2.52 (1H, d, *J* = 9.2 Hz, H_B-2″), 3.10-3.17 (1H, m, H-8a″), 3.61 (1H, q, *J* = 6.5 Hz, NC*H*(CH_3)Ph), 3.82-2.87 (1H, m, C*H*$_A$$H_B$O), 3.96-4.01 (1H, m, CH_A*H*$_B$O), 6.45-6.46 (1H, m, H-4′), 7.21-7.39 (7H, m, H-5, H-6, Ar-H), 7.56-7.65 (2H, m, H-3, H-4); δ_C (100 MHz; $CDCl_3$) 11.0 (3′-*C*H_3), 17.4 (C-8″), 20.9 (C-6″), 21.0 (NCH(*C*H_3)Ph), 25.5 (C-7″), 27.4 (C-4″), 31.7 (C-5″), 35.2 (C-4a″), 36.2 (C-3″), 47.0 (C-2″), 55.3 (N*C*H(CH_3)Ph), 60.5 (C-8a″), 70.0 (CH_2O), 126.5 (Ar-CH), 127.0 (C-4′), 127.8 (C-1), 127.9 (Ar-CH), 128.2 (Ar-CH), 128.8 (C-5), 130.1 (C-6), 131.2 (C-3), 131.6 (C-2), 132.9 (C-4), 146.0 (C-3′, Ar-C), 164.44 (COO), 169.4 (C-2′), 170.7 (C-5′); HRMS (EI+) *m/z* = $[M]^+$ $C_{30}H_{34}N_2O_4$ requires 486.25186; found 486.25221.

4.5.4 ((3″S,4a″R*,9a″R*)-1″-Benzyldecahydro-1I-cyclohepta[b]pyridin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxo-2′,5′-dihydro-1I-pyrrol-1′-yl)benzoate* **10d**. Using general method D alcohol **8d** (0.120 g, 0.44 mmol) after purification by flash chromatography (50% *n*-hexanes in ethyl acetate) gave *title compound* **10d** (0.167 g, 78%) as a light green oil. R_F = 0.55 (3:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2930, 1715, 1497, 1453, 1371, 1260, 1072; δ_H (400 MHz; $CDCl_3$) 0.94-1.19 (4H, m, H_A-4″, H_A-5″, H_A-6″, H_A-7″), 1.21-1.30 (1H, m, H_A-8″), 1.31-1.40 (1H, m, H_A-9″), 1.50-1.61 (2H, m, H_B-6″or H_B-7″and 8″-H_B), 1.62-1.70 (1H, m, H_B-9″), 1.71-1.81 (2H, m, H_B-4″ and H_B-6″ or H_B-7″), 1.85-1.94 (1H, m, H_B-5″), 1.95-2.00 (3H, m, H_A-2″, H-3″, H-4a″), 2.15 (3H, s, 3′-CH_3), 2.56 (1H, d, *J* = 9.2 Hz, H_B-2″), 2.77-2.83 (1H, m, H-9a″), 3.58-3.69 (2H, m, NC*H*$_2$Ph), 3.91-4.05 (2H, m, CH_2O), 6.44 (1H, s, H-4′), 7.19-7.35 (6H, m, H-6, Ar-H), 7.44 (1H, td, *J* = 1.4, 7.5 Hz, H-5), 7.61 (1H, td, *J* = 1.4, 7.5 Hz, H-4), 7.93 (1H, dd, *J* = 1.4, 7.5 Hz, H-3); δ_C (100 MHz, $CDCl_3$) 11.1 (3′-*C*H_3), 19.8 (C-9″), 23.3 (C-8″), 28.0 (C-4″), 31.1, 31.4 (C-6″, C-7″), 33.7 (C-5″), 36.0 (C-4a″), 37.0 (C-3″), 49.1 (C-2″), 58.8 (N*C*H_2Ph), 62.1 (C-9a″), 68.1 (CH_2O), 126.6 (Ar-CH), 127.8 (C-1), 128.1 (2 × Ar-CH), 128.5 (C-4′), 128.8 (C-5), 130.2 (C-6), 131.4 (C-3), 131.5 (C-2), 133.0 (C-4), 139.5 (Ar-C), 146.1 (C-3′), 164.7 (COO), 169.6 (C-2′), 170.7 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{30}H_{35}N_2O_4$ requires 487.2591; found 487.2580.

4.5.5 ((3″S,4a″R*,9a″R*)-1″-(3-Phenylpropyl)decahydro-1H-cyclohepta[b]pyridin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxo-2′,5′-dihydro-1H-pyrrol-1′-yl)benzoate* **10e**. Using general method D alcohol **8e** (0.120 g, 0.40 mmol) after purification by flash chromatography (50% *n*-hexanes in ethyl acetate) gave *title compound* **10e** (0.136 g, 64%) as a green oil. R_F = 0.45 (1:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2928, 2853, 1709, 1585, 1449, 1256, 1134, 1085; δ_H (400 MHz; $CDCl_3$) 0.93-1.04 (3H, m, H_A-5″ and H-6″ or H-7″), 1.13-1.19 (2H, m, H-4″), 1.23-1.40 (2H, m, H_A-8″, H_A-9″), 1.50-1.62 (4H, m, H_B-8″, H_B-9″, and H-6″ or H-7″), 1.74-1.84 (2H, m, NCH_2C*H*$_2$$CH_2$Ph), 1.90-2.03 (4H, m, H_A-2″, H-3″, H-4a″, H_B-5″), 2.16 (3H, s, 3′-CH_3), 2.46 (2H, t, *J* = 7.4 Hz, NC*H*$_2$$CH_2CH_2$Ph), 2.57 (1H, d, *J* = 7.4 Hz, H_B-2″), 2.63 (2H, t, *J* = 7.3 Hz, NCH_2CH_2C*H*$_2$Ph), 2.80-2.86 (1H, m, H-9a″), 3.97-4.07 (2H, m, CH_2O), 6.47 (1H, s, H-4′), 7.16-7.32 (6H, m, H-6, Ar-H), 7.50 (1H, td, *J* = 1.3, 7.7 Hz, H-5), 7.64 (1H, td, *J* = 1.3, 7.7 Hz, H-4), 8.06 (1H, dd, *J* = 1.3, 7.7 Hz, H-3); δ_C (100 MHz, $CDCl_3$) 11.2 (3′-CH_3), 19.1 (C-9″), 23.3 (C-8″), 28.3 (C-4″), 29.6 (NCH_2*C*H_2CH_2Ph), 31.2, 31.5 (C-6″, C-7″), 33.8 (C-5″, NCH_2CH_2*C*H_2Ph), 36.1 (C-4a″), 37.1 (C-3″), 49.9 (C-2″), 53.9 (N*C*$H_2CH_2CH_2$Ph), 61.8 (C-9a″), 68.3 (CH_2O), 125.6 (Ar-CH), 127.9 (C-1), 128.1 (Ar-CH), 128.3 (Ar-CH), 128.4 (C-4′), 128.9 (C-5), 130.1 (C-6), 131.5 (C-3), 131.8 (C-2), 133.3 (C-4), 142.5 (Ar-C), 146.2 (C-3′), 164.9 (COO), 169.6 (C-2′), 170.7 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{32}H_{39}N_2O_4$ requires 515.2904; found 515.2902.

4.5.6 ((3″S,4a″R,9a″R)-1″-((R)-1-Phenylethyl)decahydro-1H-cyclohepta[b]pyridin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxo-2′,5′-dihydro-1H-pyrrol-1′-yl)benzoate **10f**. Using general method D alcohol **8f** (0.080 g, 0.28 mmol) after purification by flash chromatography (50% *n*-hexanes in ethyl acetate) gave *title compound* **10f** (0.122 g, 88%) as a tan oil. $[\alpha]_D^{20}$ +28 (*c* 1.0, $CHCl_3$); R_F = 0.35 (1:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2929, 1709, 1495, 1451, 1375, 1256, 1083; δ_H (400 MHz; $CDCl_3$) 1.27 (3H, d, *J* = 6.7 Hz, NCH(C*H*$_3$)Ph), 1.34-1.45 (2H, m, H_A-8″, H_A-9″), 1.53-1.68 (4H, m, H-6″or H-7″, H_B-8″, H_B-9″), 1.79-1.90 (6H, m, H_A-2″, H-4″, H-4a″, H-6″ or H-7″), 1.94-2.03 (2H, m, H-5″), 2.04-2.12 (1H, m, H-3″), 2.49 (3H, d, *J* = 8.3 Hz, 3′-CH_3), 3.21-3.27 (1H, m, NC*H*(CH_3)Ph), 3.56-3.63 (1H, m, H-9a″), 3.75-3.84 (1H, m, OC*H*$_A$$H_B$), 3.92-3.97 (1H, m, OCH_A*H*$_B$), 7.15-7.41 (6H, m, H-4′, H-2, H-3, Ar-H), 7.48-7.65 (2H, m, H-4, H-5); δ_C (100 MHz, $CDCl_3$) 11.2 (3′-*C*H_3), 19.6 (C-9″), 22.1 (NCH(*C*H_3)Ph), 23.5 (C-8″), 27.9 (C-4″), 31.4, 31.9 (C-6″, C-7″), 34.2 (C-5″), 36.2 (C-4a″), 37.3 (C-3″), 48.0 (C-2″), 57.9 (N*C*H(CH_3)Ph), 61.2 (C-9a″), 127.8 (Ar-CH), 127.9 (C-4′), 128.0 (Ar-CH) 128.8 (Ar-CH), 129.3 (C-5), 131.4 (C-6), 131.6 (C-3), 133.0 (C-4), 146.1 (C-3′, Ar-C), 164.7 (COO), 169.6 (C-2′), 170.6 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{31}H_{37}N_2O_4$ requires 501.2740; found 501.2748.

4.5.7 ((3″S,4a″S*,8a″R*)-1″-Benzyl-5″,7″-dimethyldecahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxo-2′,5′-dihydro-1H-pyrrol-1′-yl)benzoate* **10g**. Using general method D alcohol **8g** (0.065 g, 0.23 mmol) after purification by flash chromatography (50% *n*-hexanes in ethyl acetate) gave *title compound* **10g** (0.081 g, 70%) as a light brown oil. R_F = 0.20 (1:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2930, 2851, 1718, 1440, 1111; δ_H (400 MHz; $CDCl_3$) 0.69-0.75 (1H, m, H_A-6″), 0.82 (3H, d, *J* = 6.6 Hz, 5″-CH_3), 0.85 (3H, d, *J* = 6.6 Hz, 7″-CH_3), 0.99-1.11 (2H, m, H_A-4″ and H_A-8″), 1.24-1.30 (1H, m, H-3″), 1.54-1.61 (1H, m, H_A-2″), 1.71-1.78 (1H, m, H_B-6″), 1.87-2.00 (2H, m, H_B-4″ and H-5″), 2.04-2.21 (6H, m, H-4a″, H-7″, H_B-8″, 3′-CH_3), 2.31-2.35 (1H, m, H-8a″), 2.87-2.96 (2H, m, H_B-2″, NC$H_A$$H_B$Ph), 3.80-4.00 (2H, m, CH_2O), 4.08-4.15 (1H, m, NC$H_A$$H_B$Ph), 6.44 (1H, s, H-4′), 7.16-7.36 (6H, m, H-6, Ar-CH), 7.39 (1H, td, *J* = 1.5, 7.7 Hz, H-5), 7.60 (1H, td, *J* = 1.5, 7.7 Hz, H-4), 7.76 (1H, dd, *J* = 1.5, 7.7 Hz, H-3); δ_C (100 MHz, $CDCl_3$) 11.3 (3′-CH_3), 19.7 (7″-CH_3), 22.6 (5″-CH_3), 26.2 (C-5″), 28.8 (C-7″), 30.3 (C-4″), 31.1 (C-4a″), 38.7 (C-8″), 44.1 (C-3″), 45.2 (C-6″), 56.8 (C-2″, NCH_2Ph), 62.1 (C-8a″), 68.4 (CH_2O), 126.5 (Ar-CH), 127.8 (Ar-CH), 128.0 (C-1), 128.1 (Ar-CH), 128.7 (C-4′), 128.8 (C-5), 130.2 (C-3), 131.5 (C-6), 131.6 (C-2), 133.0 (C-4), 140.0 (Ar-C), 146.1 (C-3′), 164.6 (COO), 169.7 (C-2′), 170.7 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{31}H_{37}N_2O_4$ requires 501.2748; found 501.2760.

4.5.8 ((3″S,4a″S*,8a″R*)-5″,7″-Dimethyl-1″-(3-phenylpropyl)decahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxo-2′,5′-dihydro-1H-pyrrol-1′-yl)benzoate* **10h**. Using general method D alcohol **8h** (0.065 g, 0.21 mmol) after purification by flash chromatography (50% *n*-hexanes in ethyl acetate) gave *title compound* **10h** (0.085 g, 77%) as a pale green oil. R_F = 0.60 (2:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2935, 2844, 1717, 1438, 1114; δ_H (400 MHz; $CDCl_3$) 0.63 (1H, q, *J* = 12.5 Hz, H-6″), 0.77 (3H, d, *J* = 6.5 Hz, 5″-CH_3), 0.82 (3H, d, *J* = 6.5 Hz, 7″-CH_3), 0.86-0.94 (1H, m, H_A-8″), 0.97-1.05 (1H, m, $NCH_2CH_ACH_BCH_2Ph$), 1.15-1.22 (1H, m, H-3″), 1.64-1.74 (2H, m, H-5″ and H_B-6″), 1.76-2.03 (6H, m, H-4″, H-7″, H_B-8″, $NCH_2CH_AH_BCH_2Ph$, $NCH_AH_BCH_2CH_2Ph$), 2.07-2.14 (1H, m, H-4a″), 2.16 (3H, s, 3′-CH_3), 2.28-2.33 (1H, m, H-8a″), 2.40-2.48 (1H, m, H_A-2″), 2.49-2.56 (1H, m, $NCH_2CH_2CH_AH_BPh$), 2.86-2.90 (2H, m, H_B-2″, $NCH_2CH_2CH_AH_BPh$), 3.00-3.04 (1H, m, $NCH_AH_BCH_2CH_2Ph$), 3.90-4.06 (2H, m, CH_2O), 6.50 (1H, s, H-4′), 7.13-7.31 (6H, m, H-6, Ar-CH), 7.45-7.53 (1H, m, H-5), 7.60-7.68 (1H, m, H-4), 8.70 (1H, dd, *J* = 1.5, 7.6 Hz, H-3); δ_C (100 MHz, $CDCl_3$) 11.1 (3′-CH_3), 19.7 (7″-CH_3), 22.5 (5″-CH_3), 25.0 (C-4″), 26.4 (C-5″), 28.7 (C-7″), 30.1 ($NCH_2CH_2CH_2Ph$), 31.3 (C-4a″), 33.8 ($NCH_2CH_2CH_2Ph$), 38.2 (C-8″), 43.4 (C-3″), 45.0 (C-6″), 52.2 (C-2″), 57.0 ($NCH_2CH_2CH_2Ph$), 60.2 (C-8a″), 68.8 (CH_2O), 125.7 (Ar-CH), 127.4 (C-1), 127.8 (Ar-CH), 128.2 (C-4′), 128.3 (Ar-CH), 128.4 (C-5), 128.9 (C-6), 130.3 (C-3), 131.7 (C-2), 133.2 (C-4), 142.3 (Ar-C), 146.4 (C-3′), 164.7 (COO), 169.7 (C-2′), 170.8 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{31}H_{39}N_2O_4$ requires 529.3061; found 529.3055.

4.6 General Method E: Preparation of succinimido anthranilates 11. To a solution of anthranilate ester **10** (1.0 mmol) in ethyl acetate (15 mL) was added 10% palladium on carbon (60 mg) and the resulting mixture was stirred under hydrogen (1 atm) for 18 h. The mixture was filtered through Celite which was washed with ethyl acetate (50 mL) and the volatile solvents were removed *in vacuo* to give the desired succinimide anthranilate **11**.

4.6.1 ((3″S,4a″R*,8a″R*)-1″-Benzyldecahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxopyrrolidin-1′-yl)benzoate* **11a**. Using general method E anthranilate ester **10a** (0.077 g, 0.160 mmol) gave *title compound* **11a** (0.075 g, 97%) as a tan oil. R_F = 0.7 (4:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2926, 2853, 1713, 1603, 1493, 1389, 1290, 1259, 1184, 1036, 1082, 1044; δ_H (400 MHz; $CDCl_3$) 1.05-1.14 (1H, m, H_A-7″), 1.26-1.34 (2H, m, H-6″), 1.36-1.49 (5H, m, H-4″, 3′-CH_3), 1.50-1.61 (4H, m, H-5″, H-8″), 1.69-1.77 (1H, m, H_B-7″), 1.83-1.97 (1H, m, H-3″), 2.00-2.12 (1H, m, H-4a″), 2.24 (1H, t, *J* = 11.3 Hz, H_A-2″), 2.42-2.60 (2H, m, H-4′), 2.62-2.65 (1H, m, H_B-2″), 2.72-2.81 (1H, m, H-8a″), 2.98-3.13 (1H, m, H-3′), 3.60 (1H, d, *J* = 13.4 Hz, NCH_AH_BPh), 3.74 (1H, d, *J* = 13.4 Hz, NCH_AH_BPh), 3.98-4.25 (2H, m, CH_2O), 7.21-7.36 (6H, m, H-6, Ar-H), 7.46 (1H, dt, *J* = 1.3, 7.7 Hz, H-5), 7.63 (1H, dt, *J* = 1.3, 7.7 Hz, H-4), 7.96 (1H, d, *J* = 10.0 Hz, H-3); δ_C (100 MHz; $CDCl_3$) 16.2 (3′-CH_3), 16.4 (3′-CH_3^*), 17.7 (C-8″), 20.9 (C-6″), 25.4 (C-7″), 27.3 (C-4″), 31.5 (C-5″), 33.9 (C-4-a″), 35.2 (C-3′), 35.5 (C-3′) 36.1 (C-3″), 36.9 (C-4′), 48.4 (C-2″), 58.4 (NCH_2Ph), 59.0 (C-8a″), 68.1 (CH_2O), 122.7 (Ar-CH), 127.3 (C-1), 128.1 (Ar-CH), 128.5 (Ar-CH), 129.2 (C-5), 129.7 (C-6), 131.4 (C-3), 132.6 (C-2), 133.2 (C-4), 139.6 (Ar-C), 164.1 (COO), 171.0 (C-2′), 179.8 (C-5′); HRMS (EI+) *m/z* = $[M]^+$ $C_{29}H_{34}N_2O_4$ requires 474.25186; found 474.25225.

4.6.2 ((3″S,4a″R*,8a″R*)-1″-(3-Phenylpropyl)decahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxopyrrolidin-1′-yl)benzoate* **11b**. Using general method E anthranilate ester **10b** (0.180 g, 0.360 mmol) gave *title compound* **11b** (0.172 g, 95%) as a green oil. R_F = 0.7 (4:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2928, 2853, 1711, 1602, 1493, 1389, 1184, 1031; δ_H (400 MHz; $CDCl_3$) 1.02-1.98 (1H, m, H_A-7″), 1.23-1.52 (9H, m, H-4″, H-6″, H-8″, 3′-CH$_3$), 1.57-1.62 (2H, m, H-5″), 1.72-1.80 (1H, m, H$_B$-7″), 1.81-1.92 (2H, m, NCH$_2$C*H*$_2$CH$_2$Ph), 2.02-2.07 (1H, m, H-4a″), 2.14-2.20 (2H, m, H$_A$-2″, H-3′), 2.47-2.59 (3H, m, H$_A$-4′, NC*H*$_2$CH$_2$CH$_2$Ph), 2.61-2.65 (2H, m, NCH$_2$CH$_2$C*H*$_2$Ph), 2.71-2.80 (1H, m, H$_B$-2″), 2.82-2.93 (1H, m, H-8a″), 2.95-3.14 (2H, m, H-3′, H$_B$-4′), 4.06-4.13 (2H, m, CH$_2$O), 7.14-7.28 (6H, m, H-6, Ar-H), 7.50 (1H, dt, *J* = 1.2, 7.7 Hz, H-5), 7.64 (1H, dt, *J* = 1.2, 7.7 Hz, H-4), 8.07 (1H, d, *J* = 7.7 Hz, H-3); δ_C (100 MHz; CDCl$_3$) 16.2 (3′-*C*H$_3$), 16.4 (3′-*C*H$_3^*$), 17.0 (C-8″), 20.9 (C-6″), 25.3 (C-7″), 27.0 (C-4″), 28.7 (NCH$_2$*C*H$_2$CH$_2$Ph), 31.3 (C-5″), 33.4 (NCH$_2$CH$_2$*C*H$_2$Ph), 34.6 (C-4a″), 35.0 (C-3′), 35.2 (C-3′), 35.7 (C-3″), 36.8 (C-4′), 48.9 (C-2″), 53.2 (N*C*H$_2$CH$_2$CH$_2$Ph), 58.4 (C-8a″), 67.9 (CH$_2$O), 125.6 (Ar-CH), 127.2 (C-1), 128.1 (Ar-CH), 128.2 (Ar-CH), 129.2 (C-5), 129.7 (C-6), 131.3 (C-3), 132.6 (C-2), 133.2 (C-4), 141.9 (Ar-C), 164.2 (COO), 175.8 (C-2′), 179.7 (C-5′); HRMS (EI+) *m/z* = $[M]^+$ $C_{31}H_{38}N_2O_4$ requires 502.28316; found 502.28394.

4.6.3 ((3″S,4a″R,8a″R)-1″-((R)-1-Phenylethyl)decahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxopyrrolidin-1′-yl)benzoate **11c**. Using general method E anthranilate ester **10c** (0.100 g, 0.205 mmol) gave *title compound* **11c** (0.095 g, 95%) as a yellow oil. $[\alpha]_D^{20}$ +30 (*c* 1.0, CHCl$_3$); R$_F$ = 0.5 (4:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2927, 2840, 1720, 1605, 1494, 1452, 1393, 1245, 1205, 1110, 1108; δ_H (400 MHz; CDCl$_3$) 1.01-1.13 (1H, m, H$_A$-7″), 1.17-1.33 (5H, m, H-6″, NCH(C*H*$_3$)Ph), 1.35-1.46 (5H, m, H-4″, 3′-CH$_3$), 1.51-1.71 (4H, m, H-5″, H-8″), 1.75-1.83 (1H, m, H$_B$-7″), 1.89-1.92 (1H, m, H-3″), 1.95-2.10 (2H, m, H$_A$-2″, H-4a″), 2.44-2.50 (2H, m, H-4′), 2.55 (1H, d, *J* = 8.8 Hz, H$_B$-2), 2.95-3.14 (1H, m, H-3′), 3.18-3.21 (1H, m, H-8a″), 3.57-3.68 (1H, q, *J* = 6.8 Hz, NC*H*(CH$_3$)Ph), 3.83-3.90 (1H, m, C*H*$_A$H$_B$O), 4.00-4.07 (1H, m, CH$_A$*H*$_B$O), 7.19-1.40 (7H, m, H-5, H-6, Ar-H), 7.58-7.62 (2H, m, H-3, H-4); δ_C (100 MHz; CDCl$_3$) 16.2 (3′-*C*H$_3$), 16.4 (3′-*C*H$_3^*$), 17.3 (C-8″), 21.0 (NCH(*C*H$_3$)Ph), 21.1 (C-6″), 25.5 (C-7″), 27.3 (C-4″), 30.8 (C-5″), 35.1 (C-3″), 35.3 (C-4a″), 36.3 (C-3′), 36.9 (C-4′), 48.8 (C-2″), 55.3 (N*C*H(CH$_3$)Ph), 60.5 (C-8a″), 67.9 (CH$_2$O), 126.4 (Ar-CH), 127.0 (C-1), 128.2 (2 × Ar-CH), 129.2 (C-5), 129.6 (C-6), 131.3 (C-3), 132.6 (C-2), 133.1 (C-4), 147.0 (Ar-C), 163.9 (COO), 171.0 (C-2′), 179.8 (C-5′); HRMS (EI+) *m/z* = $[M]^+$ $C_{30}H_{36}N_2O_4$ requires 488.2675; found 488.2677.

4.6.4 ((3″S*,4a″R*,9a″R*)-1″-Benzyldecahydro-1H-cyclohepta[b]pyridin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxopyrrolidin-1′-yl)benzoate **11d**. Using general method E anthranilate ester **10d** (0.130 g, 0.27 mmol) gave *title compound* **11d** (0.128 g, 97%) as a tan oil. R$_F$ = 0.8 (4:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2975, 2918, 1712, 1495, 1389, 1262, 1180, 1080; δ_H (400 MHz; CDCl$_3$) 0.96-1.05 (1H, m, H$_A$-5″) 1.21 (1H, m, H$_A$-8″), 1.33-1.41 (1H, m, H$_A$-9″), 1.46-1.51 (3H, m, 3′-CH$_3$), 1.51-1.65 (3H, m, H$_B$-8″ and H-6″or H-7″), 1.66-1.73 (1H, m, H$_B$-9″), 1.74-1.84 (4H, m, H-4″ and H-6″ or H-7″), 1.88-1.98 (1H, m, H$_B$-5″), 2.02-2.19 (3H, m, H-4′, H$_A$-2″), 2.45-2.60 (2H, m, H-3′, H$_B$-2″), 2.80-2.87 (1H, m, H-9a″), 3.00-3.15 (2H, m, H-3″, H-4a″), 3.60 (2H, s, NC*H*$_2$Ph), 3.96-4.10 (2H, m, OC*H*$_2$), 7.20-7.39 (6H, m, H-6, Ar-H), 7.45 (1H, t, *J* = 7.5 Hz, H-5), 7.62 (1H, dt, *J* = 1.0, 7.5 Hz, H-4), 7.90-7.97 (1H, m, H-3); δ_C (100 MHz, CDCl$_3$) 16.3 (3′-*C*H$_3$), 16.4 (3′-*C*H$_3^*$), 20.0 (C-9″), 23.4 (C-8″), 28.1 (C-4″), 31.2, 31.5 (C-6″, C-7″), 33.8 (C-5″), 35.2 (C-4a″), 36.1 (C-3″), 37.0 (C-4′), 37.1 (C-3′), 49.2 (C-2″), 58.9 (N*C*H$_2$Ph), 62.4 (C-9a″), 68.1 (OCH$_2$), 126.8 (Ar-CH), 127.3 (C-1) 128.2 (Ar-CH), 128.7 (Ar-CH), 129.4 (C-5), 129.8 (C-6), 131.5 (C-3), 132.6 (C-2), 133.3 (C-4), 139.5 (Ar-C), 164.2 (COO), 175.8 (C-2′), 176.0 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{30}H_{37}N_2O_4$ requires 489.2748; found 489.2739.

4.6.5 ((3″S*,4a″R*,9a″R*)-1″-(3-Phenylpropyl)decahydro-1H-cyclohepta[b]pyridin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxopyrrolidin-1′-yl)benzoate **11e**. Using general method E anthranilate ester **10e** (0.130 g, 0.25 mmol) gave *title compound* **11e** (0.128 g, 98%) as a tan oil. R$_F$ = 0.4 (1:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2926, 2851, 1711, 1494, 1372, 1183, 1044; δ_H (400 MHz; CDCl$_3$) 0.93-1.06 (1H, m, H$_A$-5″), 1.09-1.39 (6H, m, H-4″, H$_A$-8″, H$_A$-9″ and H-6″ or H-7″), 1.39-1.51 (3H, m, 3′-CH$_3$), 1.51-1.64 (4H, m, H$_B$-8″, H$_B$-9″ and H-6″ or H-7″), 1.72-1.85 (2H, m, NCH$_2$C*H*$_2$CH$_2$Ph), 1.88-2.11 (3H, m, H$_A$-2″, H-3″, H$_B$-5″), 2.42-2.68 (7H, m, H$_B$-2″, H-4′, NC*H*$_2$CH$_2$CH$_2$Ph, NCH$_2$CH$_2$C*H*$_2$Ph), 2.81-2.89 (1H, m, H-9a″), 2.97-3.16 (2H, m, H-3′, H-4a″), 3.95-4.09 (2H, m, CH$_2$O), 7.11-7.31 (6H, m, H-6, Ar-H), 7.50 (1H, td, *J* = 1.3, 7.7 Hz, H-5), 7.65 (1H, td, *J* = 1.3, 7.7 Hz, H-4), 8.08 (1H, bd, *J* = 7.7 Hz, H-3); δ_C (100 MHz, CDCl$_3$) 16.3 (3′-*C*H$_3$), 16.5 (3′-*C*H$_3^*$), 19.1 (C-9″), 23.3 (C-8″), 24.5 (C-4″), 28.2 (NCH$_2$*C*H$_2$CH$_2$Ph), 31.1, 31.5 (C-6″, C-7″), 33.6 (C-5″, NCH$_2$CH$_2$*C*H$_2$Ph), 35.2 (C-3′), 35.5 (C-3′), 36.0 (C-4a″), 36.9 (C-4′), 37.0 (C-3″), 49.9 (C-2″), 53.9 (N*C*H$_2$CH$_2$CH$_2$Ph), 61.8 (C-9a″), 68.1 (CH$_2$O), 125.6 (Ar-CH), 127.3 (Ar-CH), 127.3 (C-1), 128.1 (C-5, Ar-CH), 129.3 (C-6), 129.8 (C-3), 131.3 (C-2), 133.3 (C-4), 142.4 (Ar-C), 171.1 (COO), 175.8 (C-2′), 175.9 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{32}H_{41}N_2O_4$ requires 517.3061; found 517.3053.

4.6.6 ((3″S,4a″R,9a″R)-1″-((R)-1-Phenylethyl)decahydro-1H-cyclohepta[b]pyridin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxopyrrolidin-1′-yl)benzoate **11f**. Using general method E anthranilate ester **10f** (0.09 g, 0.18 mmol) gave *title compound* **11f** (0.089 g, 99%) as a tan oil. $[\alpha]_D^{20}$ +25 (*c* 1.0, $CHCl_3$); R_F = 0.35 (1:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2917, 1708, 1452, 1389, 1179, 1079; δ_H (400 MHz; $CDCl_3$) 0.98-1.04 (2H, m, H_A-5″ and H_A-6″ or H_A-7″), 1.25-1.32 (3H, m, NCH(CH_3)Ph), 1.35-1.48 (4H, m, 3′-CH_3, H_A-8″), 1.53-1.69 (4H, m, H_B-8″, H-9″ and H_B-6″or H_B-7″), 1.79-2.14 (7H, m, H_A-2″, H-4a″, H-4″, H_B-5″ and H-6″ or H-7″), 2.43-2.58 (3H, m, H-4′, H_B-2″), 2.95-3.12 (2H, m, H-3′, H-3″), 3.22-3.28 (1H, m, NC*H*(CH_3)Ph), 3.56-3.64 (1H, m, H-9a″), 3.75-3.84 (1H, m, C$H_A H_B$O), 3.93-4.02 (1H, m, $CH_A H_B$O), 7.14-7.41 (6H, m, H-6, Ar-H), 7.54-7.64 (3H, m, H-3, H-4, H-5); δ_C (100 MHz, $CDCl_3$) 16.3 (3′-CH_3), 16.4 (3′-CH_3^*), 19.6 (C-9″), 22.1 (NCH(CH_3)Ph), 23.5 (C-8″), 27.9 (C-4″), 31.4, 31.8 (C-6″, C-7″), 34.2 (C-5″), 35.2 (C-3′), 35.4 (C-3′), 36.2 (C-4a″), 37.0 (C-4′), 37.3 (C-3″), 48.1 (C-2″), 57.9 (N*C*H(CH_3)Ph), 61.3 (C-9a″), 67.9 (CH_2O), 126.5 (Ar-CH), 127.2 (Ar-CH), 127.5 (Ar-CH), 128.3 (Ar-CH), 129.3 (C-5), 129.6 (C-6), 131.4 (C-3), 132.6 (C-2), 133.0 (C-4), 146.7 (Ar-C), 164.0 (COO), 175.7 (C-2′), 175.9 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{31}H_{39}N_2O_4$ requires 503.2904; found 503.2913.

4.6.7 ((3″S,4a″S*,8a″R*)-1″-Benzyl-5″,7″-dimethyldecahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxopyrrolidin-1′-yl)benzoate* **11g**. Using general method E anthranilate ester **10g** (0.07 g, 0.14 mmol) gave *title compound* **11g** (0.068 g, 97%) as a pale brown oil. R_F = 0.2 (1:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2920, 1714, 1495, 1453, 1262, 1197, 1083; δ_H (400 MHz; $CDCl_3$) 0.67-0.75 (1H, m, H_A-6″), 0.82 (3H, d, *J* = 6.6 Hz, 5″-CH_3), 0.86 (3H, d, *J* = 6.6 Hz, 7″-CH_3), 1.00-1.13 (2H, m, H_A-4″, H_A-8″), 1.25-1.31 (1H, m, H-3″), 1.38-1.50 (3H, m, 3′-CH_3), 1.55-1.62 (1H, m, H_A-2″), 1.71-1.78 (1H, m, H_B-6″), 1.86-2.00 (2H, m, H_B-4″ and H-5″), 2.08-2.23 (3H, m, H-4a″, H-7″, H_B-8″), 2.32-2.37 (1H, m, H-8a″), 2.43-2.56 (2H, m, H-4′), 2.88-3.11 (3H, m, H_B-2″, H-3′, NC$H_A H_B$Ph), 3.78-4.00 (2H, m, CH_2O), 4.09-4.16 (1H, m, N$CH_A H_B$Ph), 7.16-7.35 (6H, m, H-6, Ar-CH), 7.39 (1H, bt, *J* = 7.6 Hz, H-5), 7.60 (1H, bt, *J* = 7.6 Hz, H-4), 7.75 (1H, bd, *J* = 7.6 Hz, H-3); δ_C (100 MHz, $CDCl_3$) 16.1 (3′-CH_3), 16.4 (3′-CH_3*), 19.6 (7″-CH_3), 22.1 (5″-CH_3), 26.1 (C-5″), 28.8 (C-7″), 30.2 (C-4″), 31.0 (C-4a″), 35.1 (C-3′), 35.2 (C-3′), 36.8 (C-4′), 38.6 (C-8″), 43.7 (C-3″), 45.1 (C-6″), 56.8 (C-2″, NCH_2Ph), 62.1 (C-8a″), 68.2 (CH_2O), 126.5 (Ar-CH), 127.2 (C-1), 128.1 (Ar-CH), 128.7 (Ar-CH), 129.2 (C-5), 129.6 (C-3), 131.2 (C-6), 132.7 (C-2), 133.1 (C-4), 140.0 (Ar-C), 164.4 (COO), 170.0 (CO), 171.0 (CO); HRMS (EI+) *m/z* = $[MH]^+$ $C_{31}H_{39}N_2O_4$ requires 503.2904; found 503.2914.

4.6.8 ((3″S,4a″S*,8a″R*)-5″,7″-Dimethyl-1″-(3-phenylpropyl)decahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxopyrrolidin-1′-yl)benzoate* **11h**. Using general method E anthranilate ester **10h** (0.08 g, 0.15 mmol) gave *title compound* **11h** (0.078 g, 98%) as a pale green oil. R_F = 0.6 (2:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2926, 2864, 1710, 1453, 1390, 1259, 1182; δ_H (400 MHz; $CDCl_3$) 0.64 (1H, q, *J* = 12.5 Hz, H_A-6″), 0.78 (3H, d, *J* = 6.5 Hz, 5″-CH_3), 0.83 (3H, d, *J* = 6.5 Hz, 7″-CH_3), 0.87-0.94 (1H, m, H_A-8″), 1.02 (1H, td, *J* = 4.6, 13.0 Hz, NCH_2C$H_A H_B$$CH_2$Ph), 1.16-1.24 (1H, m, H-3″), 1.42-1.52 (3H, m, 3′-CH_3), 1.61-2.05 (8H, m, H-4″, H-5″, H_B-6″, H-7″, H_B-8″, $NCH_2CH_A H_B CH_2$Ph, N$CH_A H_B CH_2CH_2$Ph), 2.12-2.21 (1H, m, H-4a″), 2.28-2.34 (1H, m, H-8a″), 2.41-2.72 (4H, m, H-2″, $NCH_2CH_2CH_2$Ph), 3.00-3.15 (4H, m, H-3′, H-4′, $NCH_A H_B CH_2CH_2$Ph), 3.91-4.08 (2H, m, CH_2O), 7.14-7.32 (6H, m, H-6, Ar-CH), 7.49 (1H, td, *J* = 1.2, 7.7 Hz, H-5), 7.65 (1H, td, *J* = 1.2, 7.7 Hz, H-4), 8.09 (1H, d, *J* = 7.7 Hz, H-3); δ_C (100 MHz, $CDCl_3$) 16.3 (3′-CH_3), 16.6 (3′-CH_3*), 19.8 (7″-CH_3), 22.6 (5″-CH_3), 26.0 (C-4″), 26.5 (C-5″), 28.8 (C-7″), 30.2 ($NCH_2CH_2CH_2$Ph), 31.4 (C-4a″), 33.8 ($NCH_2CH_2CH_2$Ph), 35.1 (C-3′), 35.3 (C-3′), 37.0 (C-4′), 38.3 (C-8″), 43.5 (C-3″), 45.1 (C-6″), 52.3 (C-2″), 57.0 ($NCH_2CH_2CH_2$Ph), 60.3 (C-8a″), 68.6 (CH_2O), 125.6 (Ar-CH), 127.6 (C-1), 128.2 (Ar-CH), 128.3 (Ar-CH), 129.3 (CH C-5), 129.8 (C-6), 131.4 (C-3), 132.8 (C-2), 133.3 (C-4), 142.3 (Ar-C), 164.5 (COO), 176.0 (C-2′), 179.8 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{33}H_{43}N_2O_4$ requires 531.3217; found 531.3218.

4.7 Synthesis of succinimido anthranilate 16

4.7.1 (3S,4aR,8aR)-Ethyl 1-acetyldecahydroquinoline-3-carboxylate **13**. To a solution of decahydroquinoline **7c** (0.342 g, 1.09 mmol) in methanol (5.0 mL) was added 10% palladium on carbon (0.035 g, 0.11 mmol) and the resulting mixture was stirred under hydrogen (1 atm) for 18 h. The mixture was filtered through Celite which was washed with ethyl acetate (25 mL) and the volatile solvent were removed *in vacuo* to give (3*S*,4a*R*,8a*R*)-ethyl decahydroquinoline-3-carboxylate **12** (0.208 g, 91%) as a pale green oil which was used immediately without further purification. To a solution of (3*S*,4a*R*,8a*R*)-ethyl decahydroquinoline-3-carboxylate **12** (0.200 g, 0.98 mmol) in dichloromethane (7.0 mL) was added freshly distilled triethylamine (7.0 mL) and the stirred mixture was cooled to 0 °C, DMAP (0.009 g, 0.01 mmol) was added followed by acetic anhydride (0.102 mL, 1.08 mmol) and the mixture was allowed to warm to room temperature and stirred for 20 h. The resultant mixture was acidified with 2M HCl (40 mL) and the organic layer was separated and the aqueous layer was washed with CH_2Cl_2 (2 × 40 mL). The combined organic extracts were washed with brine (80 mL), dried (Na_2SO_4) and the volatile solvents were removed *in vacuo* to give the *title compound* **13** (0.250 g, quant.) as a pale orange oil which was used without further purification. $[\alpha]_D^{20}$ +10 (*c* 1.0, $CHCl_3$); R_F = 0.15 (1:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2963, 2874, 1714 , 1652, 1363, 1182, 1102; δ_H (400 MHz; $CDCl_3$) [* denotes signal from minor rotamer] 1.18-1.35 (7H, m, OCH_2CH_3, H-5, H-7), 1.36-1.47 (4H, m, H-5*, H-6), 1.57-1.68 (6H, m, H-6*, H-8, H-8*), 1.68-1.76 (4H, m, H-4, H-4*), 1.77-1.85 (3H, m, H-4a, H-7*), 1.86-1.94 (3H, m, H-4*, H-4a*), 2.06 (6H, d, *J* = 4.1 Hz, $COCH_3$, $COCH_3$*), 2.35-2.46 (2H, m, H-2), 2.62 (1H, t, *J* = 12.4 Hz, H_A-2*), 3.06 (1H, q, *J* = 7.0 Hz, H_B-2*), 3.14 (1H, t, *J* = 12.4 Hz, H-3), 3.65 (1H, d, *J* = 12.0 Hz, H-8a), 3.73 (1H, dd, *J* = 3.8, 12.4 Hz, H-3*), 4.05-4.16 (4H, m, OCH_2CH_3, OCH_2CH_3*), 4.55-4.63 (1H, m, H-8a*), 4.66-4.73 (1H, m, H_B-2*); δ_C (100 MHz; $CDCl_3$) 8.5 (OCH_2CH_3), 14.1 (OCH_2CH_3*), 19.7 (C-5), 20.0 (C-5*), 21.5 ($COCH_3$), 22.1 ($COCH_3$*), 23.4 (C-6), 24.5 (C-6*), 25.3 (C-7), 25.5 (C-7*), 27.2 (C-4), 27.3 (C-4*), 30.7 (C-8), 30.9 (C-8*), 33.8 (C-4a), 34.8 (C-4a*), 37.2 (C-2), 42.6 (C-2*), 41.9 (C-3), 42.7 (C-3*), 45.6 (C-8a), 49.5 (C-8a*), 60.5 (OCH_2CH_3), 60.7 (OCH_2CH_3*), 168.9(NCO), 169.1 (NCO*), 173.1 (COO), 173.3 (COO*); HRMS (EI+) *m/z* = $[MH]^+$ $C_{14}H_{24}NO_3$ requires 254.1751; found 254.1746.

4.7.2 ((3S,4aR,8aR)-1-Ethyldecahydroquinolin-3-yl)methanol **14**. To a solution of lithium aluminium hydride (0.187 g, 4.9 mmol) in THF (15.0 mL) at 0 °C was added acetamide **13** (0.240 g, 0.98 mmol) in THF (15.0 mL) in a dropwise manner. The resulting mixture heated at reflux, under nitrogen, for 23 h. The resulting mixture was allowed to cool to room temperature and was quenched by the dropwise addition of water (1.5 mL). The mixture was filtered through Celite and washed with ethyl acetate (20.0 mL) and the volatile solvents were removed *in vacuo* to give the *title compound* **14** (0.190 g, quant.) as a pale orange solid which was used without further purification. $[\alpha]_D^{20}$ +11 (*c* 1.0, $CHCl_3$); m.p. 90-92 °C; R_F = 0.25 (4:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 3316, 2950, 1469, 1373, 1080, 1044, 769; δ_H (400 MHz; $CDCl_3$) 1.07 (3H, t, *J* = 7.3 Hz, NCH_2CH_3), 1.10-1.18 (1H, m, H_A-7), 1.29-1.41 (4H, m, H-5, H-8), 1.42-1.52 (2H, m, H-6), 1.53-1.60 (2H, m, H-4), 1.72-1.78 (1H, m, H_B-7), 1.83-1.94 (1H, m, H-3), 1.96-2.03 (1H, m, H-4a), 2.07 (1H, t, *J* = 11.5 Hz, H_A-2), 2.48-2.59 (2H, m, NCH_2CH_3), 2.71 (1H, dd, *J* = 11.5, 3.9 Hz, H_B-2), 2.78-2.85 (1H, m, H-8a), 3.42-3.55 (2H, m, CH_2OH); δ_C (100 MHz; $CDCl_3$) 12.9 (NCH_2CH_3), 16.7 (C-6), 21.0 (C-5), 25.6 (C-7), 27.2 (C-8), 32.0 (C-4), 35.2 (C-4a), 39.3 (C-3), 47.9 (NCH_2CH_3), 49.1 (C-2), 58.2 (C-8a), 66.7 (CH_2OH); HRMS (EI+) *m/z* = $[MH]^+$ $C_{12}H_{24}NO$ requires 198.1851; found 198.1852.

4.7.3 ((3″S,4a″R,8a″R)-1″-Ethyldecahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxo-2′,5′-dihydro-1H-pyrrol-1′-yl)benzoate **15**. To a solution of alcohol **14** (0.052 g, 0.26 mmol) in dry dichloromethane (5.0 mL) was added 2-(3-methyl-2,5-dioxo-2,5-dihydro-1*H*-pyrrol-1-yl)benzoic acid **9** (0.120 g, 0.52 mmol), DMAP (3.0 mg, 0.03 mmol) and DCC (0.107 g, 0.52 mmol) and the mixture was stirred for 18 h. The mixture was filtered through Celite and washed with ethyl acetate (30 mL). The filtered mixture was washed with aqueous $NaHCO_3$ (2 × 30 mL), dried (Na_2SO_4) and the volatile solvents were removed *in vacuo* to give the *title compound* **15** (0.087 g, 80%) as a green oil which was used without further purification. $[\alpha]_D^{20}$ +7 (*c* 1.0, $CHCl_3$); R_F = 0.8 (4:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2928, 2854, 1712, 1453, 1393, 1258, 1108; δ_H (400 MHz; $CDCl_3$) 1.08 (3H, t, *J* = 7.2 Hz, NCH_2CH_3), 1.11-1.21 (1H, m, H_A-7″), 1.23-1.37 (4H, m, H-5″, H-8″), 1.39-1.47 (2H, m, H-6″), 1.52-1.61 (3H, m, H-4″, H_B-7″), 1.94-2.01 (1H, m, H-4a″), 2.05-2.11 (2H, m, H_A-2″, H-3″), 2.16 (3H, s, 3′-CH_3), 2.45-2.60 (2H, m, NCH_2CH_3), 2.67 (1H, d, *J* = 8.6 Hz, H_B-2″), 2.79-2.89 (1H, m, H-8a″), 4.01-4.14 (2H, m, CH_2O), 6.50 (1H, s, H-4′), 7.29 (1H, d, *J* = 7.4 Hz, H-6), 7.49 (1H, t, *J* = 7.4 Hz, H-5), 7.63 (1H, t, *J* = 7.4 Hz, H-4), 8.08 (1H, d, *J* = 7.4 Hz, H-3); δ_C (100 MHz; $CDCl_3$) 11.0 (3′-CH_3), 12.8 (NCH_2CH_3), 16.6 (C-6″), 20.8 (C-5″), 25.3 (C-7″), 27.3 (C-8″), 31.5 (C-4″), 35.1 (C-4a″), 36.0 (C-3″), 47.7 (NCH_2CH_3), 48.8 (C-2″), 57.9 (C-8a″), 68.3 (CH_2O), 127.5 (C-4′), 127.8 (C-1), 128.8 (C-5), 130.2 (C-6), 131.4 (C-3), 131.6 (C-2), 133.0 (C-4), 146.1 (C-3′), 164.7 (COO), 169.5 (C-2′), 170.6 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{24}H_{31}N_2O_4$ requires 411.2278; found 411.2287.

4.7.4 ((3″S,4a″R,8a″R)-1″-Ethyldecahydroquinolin-3″-yl)methyl 2-(3′-methyl-2′,5′-dioxopyrrolidin-1′-yl)benzoate **16**. To a solution of maleimide **15** (0.08 g, 0.19 mmol) in ethyl acetate (2.0 mL) was added 10% palladium on carbon (9.0 mg) and the resulting solution was stirred under hydrogen (1 atm) for 18 h. The mixture was filtered through Celite which was washed with ethyl acetate (20 mL) and the volatile solvents were removed *in vacuo* to give the *title compound* **16** (0.079 g, 99%) as a pale brown oil. $[\alpha]_D^{20}$ +5 (*c* 1.0, $CHCl_3$); R_F = 0.75 (4:1 ethyl acetate, *n*-hexanes,); ν_{max}/cm^{-1} 2927, 2840, 1711, 1491, 1380, 1110, 1108; δ_H (400 MHz;

$CDCl_3$) 1.00 (3H, t, *J* = 7.0 Hz, NCH_2CH_3), 1.19-1.26 (1H, m, H_A-7′′), 1.28-1.43 (7H, m, 3′-CH_3, H-5′′, H-8′′), 1.46-1.53 (2H, m, H-4′′), 1.63-1.73 (1H, m, H_B-7′′), 1.90-1.98 (1H, m, H-4a′′), 2.03-2.09 (2H, m, H_A-2′′, H-3′′), 2.38-2.53 (4H, m, H-4′, NCH_2CH_3), 2.63 (1H, d, *J* = 7.0 Hz, H_B-2′′), 2.73-2.80 (1H, m, H-8a′′), 2.91-3.06 (1H, m, H-3′), 3.95-4.07 (2H, m, CH_2O), 7.13-7.23 (1H, m, H-6), 7.43 (1H, t, *J* = 7.0 Hz, H-5), 7.56 (1H, t, *J* = 7.0 Hz, H-4), 8.02 (1H, d, *J* = 7.0 Hz, H-3); δ_C (100 MHz; $CDCl_3$) 12.9 (NCH_2CH_3), 16.2 (3′-CH_3), 16.6 (3′-CH_3^*), 16.7 (C-6′′), 20.8 (C-5′′), 25.3 (C-7′′), 27.3 (C-8′′), 31.5 (C-4′′), 35.1 (C-3′, C-4a′′), 36.1 (C-3′′), 36.9 (C-4′), 47.7 (NCH_2CH_3), 48.8 (C-2′′), 57.9 (C-8a′′), 68.2 (CH_2O), 127.3 (C-1), 129.2 (C-5), 129.7 (C-6), 131.3 (C-2), 132.6 (C-3), 133.2 (C-4), 164.1 (COO), 171.0 (C-2′), 175.6 (C-5′); HRMS (EI+) *m/z* = $[MH]^+$ $C_{24}H_{33}N_2O_4$ requires 413.2435; found 413.2436.

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