# Efficient parallel resolution of pentafluorophenyl active esters using quasi-enantiomeric combinations of oxazolidin-2-ones 

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#### Abstract

The parallel resolution of racemic pentafluorophenyl 2-aryl/phenylpropanoates and butanoates using an equimolar combination of quasi-enantiomeric Evans oxazolidin-2-ones is discussed. The levels of diastereoselectivity were excellent ( $>90 \%$ de) leading to separable quasi-enantiomeric oxazolidin-2-ones in good yield. This methodology was used to resolve a series of structurally related 2-aryl/phenylpropanoic and butanoic acids.


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## 1. Introduction

Since 1997, there has been a steady increase in the number of reports on the use of parallel kinetic resolutions as a synthetic strategy for the separation of enantiomers. ${ }^{1-3}$ Within this area, Davies has demonstrated ${ }^{4}$ the parallel resolution of racemic enone (rac)-3 using a quasi-enantiomeric combination of lithium amides $(S)-\mathbf{1}$ and ( $R$ )-2 to give two complementary diastereoisomerically pure $\beta$-amino esters syn,syn,anti-4 and syn,syn,anti-5 in $39 \%$ and $35 \%$ yields with $95-97 \%$ and $97-99 \%$ diastereoisomeric excesses (Scheme 1). ${ }^{5}$ The levels of mutual recognition between ( $S$ ) $\mathbf{- 1}$ and $(S)-\mathbf{3}$, and $(R)$-2 and $(R)-\mathbf{3}$ were excellent ( $>20: 1$ ) leading to separable $\beta$-amino esters 4 and 5 in good yields with $>95 \%$ de (Scheme 1). ${ }^{5}$

Since 2005, we have been interested in the philosophy of this approach for the (mutual) resolution of $\alpha$-substituted carboxylic acids (such as pentafluorophenyl active esters) and masked $\alpha$-amino acids (such as oxazolidin-2-ones). ${ }^{6-8}$ We have reported the efficient parallel kinetic resolution of racemic oxazolidin-2-ones, such as 4-phenyl-oxazolidinone (rac)-8, using a pair of quasi-enantiomeric active esters $(S)$-6 and $(R)$ - 7 to give two separable oxazolidin2 -ones ( $S, R$ )-syn-9 and ( $R, S$ )-syn-10 in $48 \%$ and $54 \%$ yields with $90 \%$ and $94 \%$ diastereoisomeric excesses (Scheme 2). ${ }^{9}$ From this study, it was apparent that the ( $R$ )-enantiomer of oxazolidin-2one $\mathbf{8}$ recognised the $(S)$-enantiomer of active ester $(S)$ - $\mathbf{6}$, whereas, the remaining $(S)$-enantiomer of oxazolidin-2-one $\mathbf{8}$ recognised the complementary active ester ( $R$ )-7 (Scheme 2). ${ }^{10}$

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## 2. Results and discussion

Herein we report an extension to this methodology for the complementary resolution of racemic $\alpha$-substituted carboxylic acids, such as (rac)-C, using the corresponding pentafluorophenyl active ester (rac)-D, and an equimolar combination of Evans' oxazolidin-2-ones, such as $(R)$ - $\mathbf{A}$ and ( $S$ )-B, as parallel resolving components to give the oxazolidin-2-one adducts ( $S, R$ )-syn-E and ( $R, S$ )-syn-F (Scheme 3). Simple separation of these adducts, by column chromatography, followed by hydrolysis, would lead to both individual enantiomers of the original $\alpha$-substituted carboxylic acids (S)- and ( $R$ )-C, respectively (Scheme 3 ).

With this aim in mind, we first studied the mutual kinetic resolution of a series of structurally related racemic Evans' oxazolidinones (rac)-8, (rac)-(4RS,5SR)-syn-11 and (rac)-12-14 and pentafluorophenyl active esters (rac)-6-7 and (rac)-15-19 to get a measure of their stereochemical recognition (as shown in Schemes 4 and 5). Deprotonation of each racemic oxazolidin-2one, (rac)-(4RS,5SR)-syn-11, (rac)-12, (rac)-13, (rac)-8 and (rac)14, in THF at $-78^{\circ} \mathrm{C}$, followed by the addition of the active esters (rac)-15, (rac)-16, (rac)-17, (rac)-18, (rac)-7, (rac)-19 and (rac)-6 gave, after stirring for 2 h at $-78^{\circ} \mathrm{C}$, the corresponding oxazoli-din-2-one adducts 9, $\mathbf{1 0}$ and 20-52 in moderate to good yields $(25 \% \rightarrow 75 \%)$ with good to excellent levels of diastereocontrol ( $14 \%$ de $\rightarrow 96 \%$ de) (Scheme 6). From these results, it was evident that the oxazolidin-2-ones (rac)-8, (rac)-13 and (rac)- $\mathbf{1 4}$ gave higher levels of diastereocontrol for active esters (rac)-6-7, (rac)-15 and (rac)-18-19 [derived from the corresponding 2-(4-substitutedaryl)propanoic and 2-(4-substituted-aryl)butanoic acids] than the less sterically demanding oxazolidin-2-ones (rac)-(4RS,5SR)-syn-11 and (rac)-12 (Scheme 6). Oxazolidin-2-ones that contained a sterically demanding $s p^{3}$-hybridised $C(4)$-substituent [e.g., $i$ - $\operatorname{Pr}$ in (rac)-13] appeared to give higher levels of mutual recognition and

(S) -1

(R) -2


Scheme 1. Parallel kinetic resolution of enone (rac)-3 using a quasi-enantiomeric combination of lithium amides (S)-1 and (R)-2.


Scheme 2. Parallel kinetic resolution of oxazolidin-2-one (rac)-8 using a quasienantiomeric combination of active esters $(S)-\mathbf{6}$ and $(R)-7$.
favoured formation of the corresponding syn-oxazolidin-2-one adducts (with $36 \% \rightarrow 92 \%$ de). The less sterically demanding $C(4)-$
substituted oxazolidin-2-ones [e.g., Me and $\mathrm{CH}_{2} \mathrm{Ph}$ in (rac)( $4 R S, 5 S R$ )-11 and (rac)-12, respectively] gave significantly lower levels of diastereocontrol ( $38 \% \rightarrow 58 \%$ de) (Scheme 6). However, those oxazolidin-2-ones which contained an $s p^{2}$-hybridised $C(4)$ substituent [e.g., Ph and $\mathrm{CO}_{2} \mathrm{Et}$ in ( rac )-8 and (rac)-14, respectively], ${ }^{11}$ gave higher levels of diastereoselection ( $88 \%-96 \%$ de).

For a series of pentafluorophenyl 4 -substituted aryl propanoates (rac)-6-7 and (rac)-18-19, these gave similar levels of diastereoselection to their parent ester (rac)-15 with the exception of pentafluorophenyl 2-(4-chlorophenyl)propanoate (rac)-19, which was marginally less diastereoselective (Scheme 6). Increasing the sterically demanding nature of the $C(2)$-substituent of the active ester, from a methyl group [in (rac)-15] to an ethyl group [in (rac)-16], generally increased the levels of diastereocontrol (Scheme 6). However, there appears to be a steric threshold at this C(2)-position, as increasing the size of the ethyl group [in (rac)-16] to a larger isopropyl group [in (rac)-17] significantly lowered the levels of diastereocontrol (Scheme 6). Herein it was evident that the oxazolidin-2-one, 4-phenyloxazolidin-2-one (rac)-8 gave the highest levels of mutual recognition for a wide range of structurally related pentafluorophenyl 2-(aryl/or phenyl) propanoates and butanoates. The relative levels of diastereoselection for these oxazolidin-2-ones were found to be: (rac)-8> (rac)-14>(rac)$13 \gg(r a c)-12>(r a c)-(4 R S, 5 S R)-11$.

With this information in hand, we next studied the parallel kinetic resolution of this series of active esters (rac)-15, (rac)-16,

(R)-A

$(S)-B$

$\xlongequal{\mathrm{C}_{6} \mathrm{~F}_{5} \mathrm{OH}} \begin{gathered}\mathrm{DCC} \\ \mathrm{CH}_{2} \mathrm{Cl}_{2}\end{gathered}$

(rac)-C

(S,R)-syn-E


(S)-C

(R,S)-syn-F

## LiOH

 THF, $\mathrm{H}_{2} \mathrm{O}_{2}$
(R)-C

Scheme 3. Proposed parallel kinetic resolution of carboxylic acid (rac)-C using a quasi-enantiomeric combination of oxazolidin-2-ones ( $R$ )-A and ( C )-B.

(rac)-8 (rac)-(4RS,5SR)-syn-11

(rac)-12

(rac)-13

(rac)-14

Scheme 4. Oxazolidin-2-ones (rac)-8, (rac)-(4RS,5SR)-syn-11 and (rac)-12-14.


(rac)-7

(rac)-15

(rac)-16

(rac)-17

(rac)-18

(rac)-19

Scheme 5. Active esters (rac)-6, (rac)-7 and (rac)-15-19.
(rac)-17, (rac)-18, (rac)-7, (rac)-19 and (rac)-6 using three combinations of the more diastereoselective oxazolidin-2-ones, ( $S$ )-13 and $(R)-\mathbf{8}$ (in Scheme 7), (S)-13 and (S)-14 (in Scheme 8), and (S)8 and $(S)$ - $\mathbf{1 4}$ (in Scheme 9). Treatment of each pair of oxazolidin-2-ones, $(S)-13$ and ( $R$ )-8 (in Scheme 7 ), $(S)-\mathbf{1 3}$ and $(S)-14$ (in Scheme 8 ), and ( $S$ )-8 and (S)-14, with $n$-BuLi in THF at $-78^{\circ} \mathrm{C}$, followed by the addition of the active esters (rac)-15-18, (rac)-7, ( rac )-19 and (rac)-6, gave the corresponding oxazolidin-2-one adducts in moderate to good yields and with good to excellent levels of diastereocontrol (Schemes 7-9).

The levels of diastereoselection were found to be comparable to those obtained from their corresponding mutual kinetic resolutions (as shown in Scheme 6). The levels of diastereoselection were found to be the highest for the pair of quasi-enantiomeric oxazoli-din-2-ones, ( $S$ )-8 and ( $S$ )-14, which contained $s p^{2}$-hybridised $C(4)$ substituents (in Scheme 9). The oxazolidin-2-ones, $(S)$ - $\mathbf{1 3}$ and $(R)-\mathbf{8}$ (in Scheme 7), were marginally more diastereoselective than the remaining pair of oxazolidin-2-ones, $(S)$ - $\mathbf{1 3}$ and ( $S$ )-14 (in Scheme 8).

These oxazolidin-2-one adducts were separated efficiently by flash chromatography; the anti-adducts were found to have higher retention factors ( $R_{\mathrm{F}}$ ) than their corresponding syn-adducts. There was also an increased separability for adducts derived from the oxazolidin-2-ones ( $R$ )-8 and ( $S$ )-13 that contained hydrophobic (Ph and $i-\mathrm{Pr}$ ) groups and adducts derived from the more polar oxazolidin-2-one $(S)$ - $\mathbf{1 4}$ that contained a hydrophilic ethyloxycarbonyl group $\left\{\Delta R_{\mathrm{F}}\right.$ [light petroleum (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether] $\sim 0.1$ \}.

Access to enantiomerically pure 2-phenylpropanoic acids (S)and $(R)-53$ was achieved by $\mathrm{LiOH} / \mathrm{H}_{2} \mathrm{O}_{2}$ mediated hydrolysis of oxazolidin-2-ones ( $S, R$ )-syn-41, $(R, S)$-syn- 34 and $(S, S)$-syn-46 (Scheme 10). Treatment of adducts ( $S, R$ )-syn-41, ( $R, S$ )-syn-34 and


| Oxazolidinones A |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | (4RS,5SR)-syn-11 | (rac)-12 | (rac)-13 | (rac)-8 | (rac)-14 |
| Active esters D | $\mathrm{R}^{1} \quad \mathrm{Me}$ | $\mathrm{CH}_{2} \mathrm{Ph}$ | $i-\mathrm{Pr}$ | Ph | $\mathrm{CO}_{2} \mathrm{Et}$ |
| (rac)-15 | $\begin{gathered} (r a c)-\text { syn,syn-20:(rac)-anti,syn-20 } \\ 68: 32 ; 63 \%^{6 a} \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-27:(rac)-anti-27 } \\ 70: 30 ; 71 \%{ }^{6 \mathrm{a}} \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-34:(rac)-anti-34 } \\ 95: 5 ; 58 \%{ }^{6 \mathrm{a}} \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-41:(rac)-anti-41 } \\ 97: 3 ; 70 \%{ }^{6} \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-46:(rac)-anti-46 } \\ 95: 5 ; 63{ }^{6 \mathrm{a}} \end{gathered}$ |
| (rac)-16 | $\begin{gathered} \text { (rac)-syn,syn-21:(rac)-anti,syn-21 } \\ 77: 23 ; 68 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-28:(rac)-anti-28 } \\ 68: 32 ; 72 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-35:(rac)-anti-35 } \\ 95: 5 ; 62 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-42:(rac)-anti-42 } \\ >98: 2 ; 70 \%{ }^{6 \mathrm{a}} \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-47:(rac)-anti-47 } \\ 96: 4 ; 68 \% \end{gathered}$ |
| $(r a c)-17$ | $\begin{gathered} \text { (rac)-syn,syn-22:(rac)-anti,syn-22 } \\ 73: 27 ; 55 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-29:(rac)-anti-29 } \\ 66: 34 ; 40 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-36:(rac)-anti-36 } \\ \text { 68:32; } 33 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-43:(rac)-anti-43 } \\ 87: 13 ; 25 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-48:(rac)-anti-48 } \\ 57: 43 ; 62 \% \end{gathered}$ |
| (rac)-18 | $\begin{gathered} \text { (rac)-syn,syn-23:(rac)-anti,syn-23 } \\ 70: 30 ; 60 \% \end{gathered}$ | $\begin{gathered} (r a c)-s y n-30:(r a c)-a n t i-30 \\ 69: 31 ; 61 \% \end{gathered}$ | $\begin{gathered} (r a c)-s y n-37:(r a c)-a n t i-37 \\ 96: 4 ; 60 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-44:(rac)-anti-44 } \\ 95: 5 ; 62 \%^{6 \mathrm{a}} \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-49:(rac)-anti-49 } \\ 95: 5 ; 63 \% \end{gathered}$ |
| (rac)-7 | $\begin{gathered} \text { (rac)-syn,syn-24:(rac)-anti,syn-24 } \\ 75: 25 ; 71 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-31:(rac)-anti-31 } \\ 79: 21 ; 75 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-38:(rac)-anti-38 } \\ 96: 4 ; 59 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-10:(rac)-anti-10 } \\ 96: 4 ; 63 \%{ }^{6 \mathrm{a}} \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-50:(rac)-anti-50 } \\ 94: 6 ; 62 \% \end{gathered}$ |
| (rac)-19 | $\begin{gathered} \text { (rac)-syn,syn-25:(rac)-anti,syn-25 } \\ 70: 30 ; 63 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-32:(rac)-anti-32 } \\ 69: 31 ; 61 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-39:(rac)-anti-39 } \\ 74: 26 ; 63 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-45:(rac)-anti-45 } \\ 95: 5 ; 62 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-51:(rac)-anti-51 } \\ 95: 5 ; 57 \% \end{gathered}$ |
| (rac)-6 | $\begin{gathered} \text { (rac)-syn,syn-26:(rac)-anti,syn-26 } \\ 73: 27 ; 64 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-33:(rac)-anti-33 } \\ 72: 28 ; 72 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-40:(rac)-anti-40 } \\ 92: 8 ; 58 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-9:(rac)-anti-9 } \\ 95: 5 ; 65 \% \end{gathered}$ | $\begin{gathered} \text { (rac)-syn-52:(rac)-anti-52 } \\ 97: 3 ; 59 \% \end{gathered}$ |

[^1]

Scheme 7. Parallel kinetic resolution of active esters (rac)-6, (rac)-7 and (rac)-15-19 using oxazolidin-2-ones (S)-13 and (R)-8.


Scheme 8. Parallel kinetic resolution of active esters (rac)-6, (rac)- $\mathbf{7}$ and (rac)-15-19 using oxazolidin-2-ones (S)-13 and (S)-14.
$(S, S)$-syn- $\mathbf{4 6}$ with $\mathrm{LiOH} / \mathrm{H}_{2} \mathrm{O}_{2}$ in $\mathrm{THF} / \mathrm{H}_{2} \mathrm{O}$ (3:1), and stirring the resulting solution for 12 h , gave the enantiomerically pure 2phenylpropanoic acids (S)-53, (R)-53 and (S)-53 in 90\%, 85\% and $87 \%$ yields, respectively (Scheme 10). In addition, the hydrolysis
of the remaining oxazolidin-2-ones ( $S, R$ )-syn-42-43, ( $(S, R)$-syn-4445 and ( $(, R)$-syn-9-10 under our standard conditions gave access to the corresponding enantiomerically pure 2-phenylbutanoic acids (S)-54 (in $91 \%$ yield) and (S)-55 (in $83 \%$ yield), and the


Scheme 9. Parallel kinetic resolution of active esters (rac)-6, (rac)-7 and (rac)-15-19 using oxazolidin-2-ones (S)-8 and (S)-14.

4-substituted-aryl propanoic acids (S)-56 (in $89 \%$ yield), ( $S$ )-57 (in $92 \%$ yield), ( $S$ )-58 (in $85 \%$ yield) and ( $S$ )-59 (in 90\% yield) in good yield and with high levels of enantiomeric purity (Scheme 10). ${ }^{12}$

## 3. Conclusion

In conclusion, we have reported an efficient parallel kinetic resolution of a series of structurally related active esters, such as pentafluorophenyl 2-phenylpropanoate (rac)-15 using a combination of quasi-enantiomeric Evans' oxazolidinones. This methodology appears to be efficient for a variety of structurally related oxazolidinones [e.g., (S)-8 and (S)-14] and gives the separable diastereoisomerically pure syn-oxazolidin-2-one adducts 41 and 46 in good yield. Our reaction type is complementary to Evans' original antialkylation methodology ${ }^{13}$ (for prostereogenic phenylacetyl oxaz-olidin-2-ones) as this method favours the formation of related oxazolidin-2-one anti-adducts with near perfect diastereocontrol.

## 4. Experimental

### 4.1. General

All solvents were distilled before use. All the reactions were carried out under nitrogen using oven-dried glassware. Flash column chromatography was carried out using Merck Kieselgel 60 (230400 mesh). Thin layer chromatography (TLC) was carried out on commercially available pre-coated plates (Merck Kieselgel $60 \mathrm{~F}_{254}$ silica). Proton and carbon NMR spectra were recorded on a Bruker 400 MHz Fourier transform spectrometer using an internal deuterium lock. Chemical shifts are quoted in parts per million downfield from tetramethylsilane. Carbon NMR spectra were recorded with broad proton decoupling. Infrared spectra were recorded on
a Shimadzu 8300 FTIR spectrometer. Optical rotations were measured using an automatic AA-10 Optical Activity Ltd polarimeter.

### 4.2. Pentafluorophenyl 2-(6-methoxynaphthalen-2-yl)propanoate (rac)-6

2-(6-Methoxy-naphthalen-2-yl)-propanoic acid (rac)-59 (5.0 g, 21.7 mmol ) was added to a stirred solution of $N, N^{\prime}$-dicyclohexylcarbodiimide (DCC) ( $4.90 \mathrm{~g}, 23.9 \mathrm{mmol}$ ) in dichloromethane $(20 \mathrm{~mL})$. The solution was stirred for 2 min . Pentafluorophenol $(4.00 \mathrm{~g}, 21.7 \mathrm{mmol})$ in dichloromethane ( 50 mL ) was added and the resulting solution was stirred for 12 h . The resulting precipitate ( $N, N^{\prime}$-dicyclohexylurea) was filtered off (using suction filtration). Water ( 50 mL ) was added and the solution was extracted into dichloromethane ( $3 \times 100 \mathrm{~mL}$ ). The combined organic layers were dried (over $\mathrm{MgSO}_{4}$ ) and evaporated under reduced pressure. The crude residue was purified by flash column chromatography on silica gel eluting with light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (9:1) to give pentafluorophenyl-2-(6-methoxy-naphthalen2 -yl)-propanoate (rac)-6 ( $8.61 \mathrm{~g}, 70 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (9:1)] 0.65; mp 51$53^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{C}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.76-$ 7.77 (1H, d, J 8.6, CH; Ar), 7.75 (1H, br s, CH; Ar), 7.74 ( $1 \mathrm{H}, \mathrm{d}, \mathrm{J}$ $8.6, \mathrm{CH}$; Ar), 7.45 ( $1 \mathrm{H}, \mathrm{dd}, J 8.6$ and $1.8, \mathrm{CH}$; Ar), 7.18 ( $1 \mathrm{H}, \mathrm{dd}, J$ 8.6 and $2.5, \mathrm{CH}, \mathrm{Ar}), 7.14$ ( 1 H , br t, J 2.5, CH; Ar), 4.38 ( $1 \mathrm{H}, \mathrm{q}, ~ J$ 7.2, $\left.\mathrm{ArCHCH}_{3}\right), 3.91\left(3 \mathrm{H}, \mathrm{s}, \mathrm{OCH}_{3}\right)$ and $1.71(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.2, \mathrm{ArCHCH} 3)$; $\delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 170.7(\mathrm{C}=0)$, 157.9 (i-CO; Ar), 141.0 ( 142.32 and 139.8, 2C, ddt, ${ }^{1} J_{C, F}=249.8,{ }^{2} J_{C, F}=12.2$ and $\left.{ }^{3} J_{C, F}=4.6, C(2)-\mathrm{F}\right)$, 139.3 ( 140.63 and $138.11,1 \mathrm{C}, \mathrm{dtt},{ }^{1} J_{C, F}=252.1,{ }^{2} J_{C, F}=13.0$ and $\left.{ }^{3} J_{\mathrm{C}, \mathrm{F}}=4.5, \quad \mathrm{C}(4)-\mathrm{F}\right), \quad 137.8 \quad(139.04$ and $136.54, \quad 2 \mathrm{C}$, dtdd, ${ }^{1} J_{C, F}=250.6,{ }^{2} J_{C, F}=13.8,{ }^{3} J_{C, F}=5.3$ and $\left.{ }^{4} J_{C, F}=3.0, C(3)-F\right), 133.9$, 133.7 and $128.9(3 \times i-C$; Ar), 129.3, 127.5, 126.2, 125.7, 119.3 and $105.6(6 \times \mathrm{CH} ; \mathrm{Ar}), 125.2\left(1 \mathrm{C}, \mathrm{m}, i-\mathrm{CO} ; \mathrm{OC}_{6} \mathrm{~F}_{5}\right), 55.3\left(\mathrm{OCH}_{3}\right)$, $45.9\left(\mathrm{ArCHCH}_{3}\right)$ and $18.5\left(\mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{F}}\left(378 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$,





$(S, R)$-syn-43; $74 \%$ d.e. $(S)-55 ; 83 \% ; 74 \%$ e.e.



Scheme 10. Hydrolysis of oxazolidin-2-ones ( $S, R$ )-syn-41, ( $R, S$ )-syn-34, ( $(S, S)$-syn-46, ( $(, R)$-syn-42, ( $(, R)$-syn-43, ( $(, R)$-syn-44, ( $(, R)$-syn-10, ( $(, R)$-syn-45 and ( $(S, R)$-syn-9.
$-152.5\left(2 \mathrm{~F}, \mathrm{~d},{ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=17.0, \mathrm{~F}_{\text {ortho }}\right),-157.9\left(1 \mathrm{~F}, \mathrm{t},{ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=21.6, \mathrm{~F}_{\text {para }}\right)$ and -162.3 ( 2 F, dd, ${ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=21.6$ and 17.0, $\mathrm{F}_{\text {meta }}$ ) (Found $\mathrm{M}^{+}, 396.0783$; $\mathrm{C}_{20} \mathrm{H}_{13} \mathrm{~F}_{5} \mathrm{O}_{3}{ }^{+}$requires 396.0779 ).

### 4.3. Pentafluorophenyl 2-(4-isobutylphenyl)propanoate (rac)-7

This has been reported elsewhere. ${ }^{14}$

### 4.4. Pentafluorophenyl 2-phenylpropanoate (rac)-15

This has been reported elsewhere. ${ }^{14}$

### 4.5. Pentafluorophenyl 2-phenylbutanoate (rac)-16

This has been reported elsewhere. ${ }^{14}$

### 4.6. Pentafluorophenyl 2-phenyl-3-methylbutanoate (rac)-17

At first, DCC ( $1.65 \mathrm{~g}, 7.28 \mathrm{mmol}$ ) was slowly added to a solution of pentafluorophenol $(1.34 \mathrm{~g}, 7.28 \mathrm{mmol})$ in dichloromethane $(10 \mathrm{~mL})$. The resulting solution was stirred for 5 min . 2-Phenyl-3methyl butanoic acid (rac)-55 ( $1.3 \mathrm{~g}, 7.28 \mathrm{mmol}$ ) in dichloromethane ( 10 mL ) was slowly added (in four portions) to this solution (over 2 h ). The solution was stirred for 12 h and the resulting precipitate ( $N, N^{\prime}$-dicyclohexylurea) was filtered off (using suction filtration). Water $(30 \mathrm{~mL})$ was added and the solution was extracted into dichloromethane $(3 \times 100 \mathrm{~mL})$. The combined organic layers were dried (over $\mathrm{MgSO}_{4}$ ) and evaporated under reduced pressure. The crude residue was purified by flash column chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (9:1) to give pentafluorophenyl 2-phe-nyl-3-methyl butanoate ( rac )-17 ( $2.05 \mathrm{~g}, 82 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (9:1)] 0.77; mp $45-48^{\circ} \mathrm{C}$; $v_{\max }($ film $) \mathrm{cm}^{-1} 1776(\mathrm{C}=\mathrm{O}) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.39-7.31(5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH} ; \mathrm{Ph}), 3.51(1 \mathrm{H}, \mathrm{d}, J$ 10.3, PhCHi-Pr), 2.51-2.40 (1H, m, $\left.\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.15(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.6$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.79\left(3 \mathrm{H}, \mathrm{d}, J 6.6, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ 169.9 ( $\mathrm{OC}=\mathrm{O}$ ), 141.1 (142.37 and $139.88,2 \mathrm{C}$, ddt, ${ }^{1} \mathrm{~J}_{\mathrm{C}, \mathrm{F}}=251.4$, ${ }^{2} J_{C, F}=12.3$ and $\left.{ }^{3} J_{C, F}=3.8, C(2)-F\right), 139.4(140.65$ and $138.14,1 \mathrm{C}$, dtt, ${ }^{1} J_{C, F}=252.9,{ }^{2} J_{C, F}=13.8$ and $\left.{ }^{3} J_{C, F}=4.6, C(4)-F\right), 137.8$ (139.05 and $136.58,2 \mathrm{C}$, dtdd, ${ }^{1} J_{\mathrm{C}, \mathrm{F}}=249.1,{ }^{2} J_{\mathrm{C}, \mathrm{F}}=13.1,{ }^{3} J_{\mathrm{C}, \mathrm{F}}=5.4$ and $\left.{ }^{4} J_{C, F}=3.1, C(3)-F\right), 136.4(i-C ; P h), 128.8^{2}, 128.5^{2}$ and $127.9^{1}$ $(5 \times \mathrm{CH} ; \mathrm{Ph}), 125.1\left(1 \mathrm{C}, \mathrm{tdt},{ }^{2} J_{\mathrm{C}, \mathrm{F}}=14.6,{ }^{4} J_{\mathrm{C}, \mathrm{F}}=4.6\right.$ and ${ }^{3} J_{\mathrm{C}, \mathrm{F}}=2.3, i-$ $\left.\mathrm{CO} ; \mathrm{OC}_{6} \mathrm{~F}_{5}\right), 59.2(\mathrm{PhCHi}-\mathrm{Pr}), 31.8\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 21.2\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $20.0\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{F}}\left(378 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)-152.3(2 \mathrm{~F}, \mathrm{dt}$, ${ }^{3} J_{\mathrm{F}, \mathrm{F}}=17.3$ and $\left.{ }^{4} J_{\mathrm{F}, \mathrm{F}}=4.8, \mathrm{~F}_{\text {ortho }}\right),-158.0\left(1 \mathrm{~F}, \mathrm{t},{ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=21.9, \mathrm{~F}_{\text {para }}\right)$ and $-162.4\left(2 \mathrm{~F}, \mathrm{td},{ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=21.9\right.$ and ${ }^{4} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=4.8, \mathrm{~F}_{\text {meta }}$ ) (Found $\mathrm{M}^{+}$ 344.0829; $\mathrm{C}_{17} \mathrm{H}_{13} \mathrm{~F}_{5} \mathrm{O}_{2}{ }^{+}$requires $\mathrm{M}^{+} 344.0830$ ); m/z 344 ( $10 \%$, $\left.\mathrm{M}^{+}\right), 133\left[65,\left(\mathrm{PhCHC}_{3} \mathrm{H}_{7}\right)^{+}\right]$and $91\left[100,\left(\mathrm{PhCH}_{2}\right)^{+}\right]$.

### 4.7. Pentafluorophenyl 2-(4-methylphenyl)propanoate (rac)-18

In the same way as active ester (rac)-6, 2-(4-methylphenyl)propanoic acid ( rac )-56 ( $3.0 \mathrm{~g}, 18.2 \mathrm{mmol}$ ), DCC ( 4.14 g , 19.2 mmol ) and pentafluorophenol ( $3.36 \mathrm{~g}, 18.2 \mathrm{mmol}$ ) gave, pentafluorophenyl 2-(4-methylphenyl)propanoate (rac)-18 (5.10 g, $85 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/ diethyl ether (9:1)] 0.65; $v_{\max }(f i l m) \mathrm{cm}^{-1} 1785(\mathrm{C}=\mathrm{O}) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.24(2 \mathrm{H}$, dt, $J 8.2$ and $2.1,2 \times \mathrm{CH} ; \mathrm{Ar}), 7.18$ $(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH} ; \mathrm{Ar}), 4.03\left(1 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{ArCHCH}_{3}\right)$, $2.34\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and $1.62\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.2, \mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}$ $\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 170.6(\mathrm{OC}=\mathrm{O}), 141.1$ ( 142.51 and $139.89,2 \mathrm{C}$, ddt, ${ }^{1} J_{C, F}=251.6,{ }^{2} J_{C, F}=11.9$ and $\left.{ }^{3} J_{C, F}=4.6, C(2)-F\right), 139.4(140.63$ and $138.12,1 \mathrm{C}, \mathrm{dtt},{ }^{1} J_{\mathrm{C}, \mathrm{F}}=252.8,{ }^{2} J_{\mathrm{C}, \mathrm{F}}=13.4$ and $\left.{ }^{3} J_{\mathrm{C}, \mathrm{F}}=3.8\right)$,
$\mathrm{C}(4)-\mathrm{F}), \quad 137.8 \quad\left(139.07\right.$ and $136.56, \quad 2 \mathrm{C}, \quad \mathrm{dtdd},{ }^{1} J_{\mathrm{C}, \mathrm{F}}=252.8$, ${ }^{2} J_{C, F}=12.1,{ }^{3} J_{C, F}=5.3$ and $\left.{ }^{4} J_{C, F}=3.1, C(3)-F\right), 137.4$ and 135.8 ( $2 \times i-\mathrm{C} ; \mathrm{Ar}$ ), 129.5 and $127.2(2 \times \mathrm{CH} ; \mathrm{Ar}), 125.2$ (1C, tdt, ${ }^{2} J_{\mathrm{C}, \mathrm{F}}=14.3,{ }^{4} \mathrm{~J}_{\mathrm{C}, \mathrm{F}}=4.6$ and $\left.{ }^{3} J_{\mathrm{C}, \mathrm{F}}=2.3, i-\mathrm{CO} ; \mathrm{OC}_{6} \mathrm{~F}_{5}\right), 44.6\left(\mathrm{ArCHCH}_{3}\right)$, $20.8\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and $18.4\left(\mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{F}}\left(378 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)-152.5$ ( $2 \mathrm{~F}, \mathrm{~d},{ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=18.5, \mathrm{~F}_{\text {ortho }}$ ), $-158.0\left(1 \mathrm{~F}, \mathrm{t},{ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=20.9, \mathrm{~F}_{\text {para }}\right)$ and -162.4 (2F, dd, ${ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=20.9$ and 18.5, $\mathrm{F}_{\text {meta }}$ ) (Found $\mathrm{M}^{+} 330.0671$; $\mathrm{C}_{16} \mathrm{H}_{11} \mathrm{~F}_{5} \mathrm{O}_{2}{ }^{+}$requires $\mathrm{M}^{+}, 330.0674$ ).

### 4.8. Pentafluorophenyl-2-(4-chlorophenyl)propanoate (rac)-19

In the same way as active ester (rac)-6, 4-chlorophenylpropanoic acid (rac)-58 ( $5.00 \mathrm{~g}, 27.1 \mathrm{mmol}$ ), $N, N^{\prime}$-dicyclohexylcarbodiimide ( $6.14 \mathrm{~g}, 29.8 \mathrm{mmol}$ ) and pentafluorophenol ( $4.98 \mathrm{~g}, 27.1 \mathrm{mmol}$ ), gave the active ester (rac)-19 ( $8.73 \mathrm{~g}, 92 \%$ ) as a colourless liquid; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (9:1)] 0.62; $v_{\text {max }}$ (film) $\mathrm{cm}^{-1} 1782(\mathrm{C}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.35(2 \mathrm{H}, \mathrm{dt}, J 8.8$ and $2.2,2 \times \mathrm{CH}$; Ar), $7.29(2 \mathrm{H}, \mathrm{dt}, J 8.8$ and $2.2,2 \times \mathrm{CH}$; Ar), 4.04 $\left(1 \mathrm{H}, \mathrm{q}, J 7.1, \mathrm{ArCHCH}_{3}\right)$ and $1.63\left(3 \mathrm{H}, \mathrm{d}, J 7.1, \mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}$ ( $100 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 170.2 ( $\mathrm{C}=0$ ), 141.1 ( 142.29 and 139.78, 2C, ddt, ${ }^{1} J_{C, F}=250.6 \mathrm{~Hz},{ }^{2} J_{C, F}=12.2 \mathrm{~Hz}$ and $\left.{ }^{3} J_{\mathrm{C}, \mathrm{F}}=3.8 \mathrm{~Hz}, \mathrm{C}(2)-\mathrm{F}\right), 139.5$ ( 140.73 and $138.21,1 \mathrm{C}, \mathrm{dtt},{ }^{1} J_{\mathrm{C}, \mathrm{F}}=252.1 \mathrm{~Hz},{ }^{2} \mathrm{~J}_{\mathrm{C}, \mathrm{F}}=13.7 \mathrm{~Hz}$ and $\left.{ }^{3} J_{\mathrm{C}, \mathrm{F}}=3.8 \mathrm{~Hz}, \quad \mathrm{C}(4)-\mathrm{F}\right), 137.8 \quad(139.05$ and $136.54,2 \mathrm{C}$, dtdd, ${ }^{1} J_{C, F}=250.9 \mathrm{~Hz},{ }^{2} J_{C, F}=14.5 \mathrm{~Hz},{ }^{3} J_{C, F}=5.3 \mathrm{~Hz}$ and ${ }^{4} J_{C, F}=3.1 \mathrm{~Hz}, \mathrm{C}(3)-$ F), 137.1 (i-CCl; Ar), 133.7 (i-C; Ar), $129.1^{2}$ and $128.8^{2}(4 \times \mathrm{CH}$; Ar), $125.0\left(1 \mathrm{C}\right.$, tdt, ${ }^{2} J_{C, F}=14.5 \mathrm{~Hz},{ }^{4} J_{C, F}=5.3 \mathrm{~Hz}$ and ${ }^{3} J_{C, F}=3.0 \mathrm{~Hz}, i-$ $\left.\mathrm{CO} ; \mathrm{OC}_{6} \mathrm{~F}_{5}\right), 44.4(\mathrm{ArCH})$ and $18.5\left(\mathrm{CH}_{3} \mathrm{CH}\right)$; $\delta_{\mathrm{F}}\left(378 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ $-152.6\left(2 \mathrm{~F}, \mathrm{~d},{ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=18.5, \mathrm{~F}_{\text {ortho }}\right),-157.6\left(1 \mathrm{~F}, \mathrm{t},{ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=20.9, \mathrm{~F}_{\text {para }}\right)$ and -162.0 ( $2 \mathrm{~F}, \mathrm{dd},{ }^{3} \mathrm{~J}_{\mathrm{F}, \mathrm{F}}=20.9$ and $18.5, \mathrm{~F}_{\text {meta }}$ ) (Found $\mathrm{M}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 350.0124; $\mathrm{C}_{15} \mathrm{H}_{8} \mathrm{ClF}_{5} \mathrm{O}_{2}$ requires $\left.\mathrm{M}\left({ }^{35} \mathrm{Cl}\right)^{+}, 350.0127\right)$.
4.9. Mutual kinetic resolutions of oxazolidin-2-ones (rac)-8, (4RS,5SR)-11, (rac)-12, (rac)-13 and (rac)-14 using active esters (rac)-6, (rac)-7, (rac)-15, (rac)-16, (rac)-17, (rac)-18 and (rac)-19

For these compounds (oxazolidin-2-ones (rac)-8, (4RS,5SR)-11, (rac)-12, (rac)-13 and (rac)-14 using active esters (rac)-6, (rac)-7, $(r a c)-15,(r a c)-16,(r a c)-17,(r a c)-18 ~ a n d ~(r a c)-19) ~ t h e ~ m u t u a l ~ k i-~$ netic resolutions are given below.
4.10. Synthesis of 4-methyl-5-phenyl-3-(2-phenylpropanoyl)-oxazolidin-2-one (rac)-anti,syn-20 and 4-methyl-5-phenyl-3-(2-phenylpropanoyl)oxazolidin-2-one (rac)-syn,syn-20

At first, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ) was added to a stirred solution of 4-methyl-5-phenyl-oxazolidin-2-one (rac)$(4 R S, 5 S R)-\mathbf{1 1}(0.24 \mathrm{~g}, 1.36 \mathrm{mmol})$ in THF at $-78^{\circ} \mathrm{C}$. After stirring for 1 h , a solution of pentafluorophenyl 2-phenylpropanoate ( rac )-15 ( $0.47 \mathrm{~g}, 1.50 \mathrm{mmol}$ ) in THF ( 1 mL ) was added. The resulting mixture was stirred for 2 h at $-78^{\circ} \mathrm{C}$. The reaction was quenched with water ( 10 mL ). The organic layer was extracted with diethyl ether ( $2 \times 10 \mathrm{~mL}$ ), dried (over $\mathrm{MgSO}_{4}$ ) and evaporated under reduced pressure to give a mixture of diastereoisomeric oxazolidin-2-ones 20 [ratio 68:32 syn,syn-:anti,syn-]. The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxazolidin-2one (rac)-anti,syn-20 ( $88 \mathrm{mg}, 22 \%$ ) as a colourless viscous oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.76 ; $v_{\text {max }}$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and $1697(\mathrm{NC}=0) ; \delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 7.43-7.38(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH}$; Ph $), 7.37-7.30(4 \mathrm{H}, \mathrm{m}, 4 \times \mathrm{CH}$; $2 \times \mathrm{Ph}), 7.28-7.22(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH}$; Ph), $5.49(1 \mathrm{H}, \mathrm{d}, J 7.1, \mathrm{OCHPh})$, $5.14\left(1 \mathrm{H}, \mathrm{q}, J 7.1, \mathrm{PhCHCH}_{3}\right), 4.68\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{3} \mathrm{CHN}\right), 1.51(3 \mathrm{H}, \mathrm{d}, \mathrm{J}$ 7.1, $\mathrm{PhCHCH}_{3}$ ) and $0.94\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.6, \mathrm{CH}_{3} \mathrm{CHN}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ 174.1 ( $\mathrm{NC}=\mathrm{O}$ ), 152.4 ( $\mathrm{OC}=\mathrm{O}$ ), 140.3 ( $i-\mathrm{C} ; \mathrm{Ph} ; \mathrm{PhCHCH}_{3}$ ), $133.0(i-\mathrm{C}$;

Ph ; PhCHO ), $129.4,{ }^{5} 127.9,{ }^{2} 127.0^{1}$ and $125.4^{2}(10 \times \mathrm{CH} ; 2 \times \mathrm{Ph})$, 78.4 (OCHPh), $55.1\left(\mathrm{CH}_{3} \mathrm{CHN}\right), 43.1\left(\mathrm{PhCHCH}_{3}\right), 19.0\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$ and $14.3\left(\mathrm{PhCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+} 310.1430 . \mathrm{C}_{19} \mathrm{H}_{20} \mathrm{NO}_{3}{ }^{+}$requires $\mathrm{MH}^{+}, 310.1443$ ); and the oxazolidin-2-one (rac)-syn,syn-20 ( $184 \mathrm{mg}, 43 \%$ ) as white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.63; mp 92-95 ${ }^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1774(\mathrm{OC}=\mathrm{O})$ and $1701(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.42-$ 7.37 ( $2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH} ; \mathrm{Ph}$ ), $7.36-7.30(5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 7.28-$ 7.24 (1H, m, CH; Ph), 7.21-7.16 (2H, m, $2 \times$ CH; Ph), 5.64 ( $1 \mathrm{H}, \mathrm{d}, \mathrm{J}$ 7.2, OCHPh), $5.08\left(1 \mathrm{H}, \mathrm{q}, \mathrm{J} 7.1, \mathrm{PhCHCH}_{3}\right), 4.82\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{3} \mathrm{CHN}\right)$, $1.51\left(3 \mathrm{H}, \mathrm{d}, J 7.1, \mathrm{PhCHCH}_{3}\right)$ and $0.74\left(3 \mathrm{H}, \mathrm{d}, J 6.6, \mathrm{CH}_{3} \mathrm{CHN}\right) ; \delta_{\mathrm{C}}$ ( $100 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 174.0 ( $\mathrm{NC}=\mathrm{O}$ ), 152.3 ( $\mathrm{OC}=\mathrm{O}$ ), 140.1 (i-C; Ph; $\mathrm{PhCHCH}_{3}$ ), 133.3 (i-C; Ph; PhCHO), 128.5, ${ }^{1} 128.4,{ }^{4} 127.9,{ }^{2} 126.9^{1}$ and $125.5^{2}(10 \times \mathrm{CH} ; 2 \times \mathrm{Ph})$, $78.8(\mathrm{OCHPh})$, $54.4\left(\mathrm{CH}_{3} \mathrm{CHN}\right), 43.3$ $\left(\mathrm{PhCHCH}_{3}\right), 19.3\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$ and $14.0\left(\mathrm{PhCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}$ 310.1460. $\mathrm{C}_{19} \mathrm{H}_{20} \mathrm{NO}_{3}{ }^{+}$requires 310.1443).

### 4.11. Synthesis of 4-benzyl-3-(2-phenylpropanoyl)oxazolidine-2-one (rac)-anti-27 and 4-benzyl-3-(2-phenylpropanoyl)oxazo-lidine-2-one (rac)-syn-27

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-benzyl-oxazoli-din-2-one ( rac )-12 ( $0.24 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-phenylpropanoate ( rac )-15 ( $0.47 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazoli-din-2-ones syn- and anti-27 (ratio 70:30 syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti-27 ( $89 \mathrm{mg}, 21 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.66 ; \mathrm{mp} 64-67^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and $1699(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.39-7.21(10 \mathrm{H}, \mathrm{m}$, $10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 5.12\left(1 \mathrm{H}, \mathrm{q}, J 7.0, \mathrm{PhCHCH}_{3}\right), 4.61-4.55(1 \mathrm{H}, \mathrm{m}$, BnCHN), $4.10\left(1 \mathrm{H}\right.$, dd, $J 9.2$ and $\left.2.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.01(1 \mathrm{H}, \mathrm{t}, J 9.2$, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.35\left(1 \mathrm{H}, \mathrm{dd}, J 13.1\right.$ and $\left.3.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right), 2.80(1 \mathrm{H}, \mathrm{dd}, J$ 13.1 and $\left.9.8, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{Ph}\right)$ and $1.55\left(3 \mathrm{H}, \mathrm{d}, J 7.0, \mathrm{PhCHCH}_{3}\right) ; \delta_{\mathrm{C}}$ $\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.5(\mathrm{NC}=\mathrm{O}), 152.7(\mathrm{OC}=\mathrm{O}), 140.2(i-\mathrm{C} ; \mathrm{Ph})$, 135.3 (i-C; Ph), 129.3, ${ }^{2} 128.8,{ }^{2} 128.5,{ }^{2} 128.0,{ }^{2} 127.2^{1}$ and $127.1^{1}$ $(10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 65.7\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.8(\mathrm{BnCHN}), 42.8\left(\mathrm{PhCHCH}_{3}\right)$, $37.8\left(\mathrm{CH}_{2} \mathrm{Ph}\right)$ and $19.3\left(\mathrm{PhCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}$310.1442. $\mathrm{C}_{19} \mathrm{H}_{20} \mathrm{NO}_{3}{ }^{+}$requires 310.1443); and the oxazolidin-2-one (rac)-syn-27 ( $212 \mathrm{mg}, 50 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.43; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1775$ $(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.49-7.45(2 \mathrm{H}$, $\mathrm{m}, 2 \times \mathrm{CH}$; Ph $), 7.40-7.34(2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH} ; \mathrm{Ph}), 7.31-7.28(1 \mathrm{H}, \mathrm{m}$, $\mathrm{CH} ; \mathrm{Ph}), 7.23-7.18(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH} ; \mathrm{Ph}), 6.98-6.94(2 \mathrm{H}, \mathrm{m}$, $2 \times \mathrm{CH} ; \mathrm{Ph}), 5.11\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{PhCHCH}_{3}\right), 4.78-4.72(1 \mathrm{H}, \mathrm{m}$, BnCHN), $4.18\left(1 \mathrm{H}, \mathrm{t}, J 8.5, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.07(1 \mathrm{H}, \mathrm{dd} J 8.5$ and 3.2 , $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.08\left(1 \mathrm{H}\right.$, dd $J 13.5$ and $\left.3.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right), 2.58(1 \mathrm{H}, \mathrm{dd}, J$ 13.5 and $\left.8.8, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{Ph}\right)$ and $1.52\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{PhCHCH}_{3}\right) ; \delta_{\mathrm{C}}$ $\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.1(\mathrm{NC}=\mathrm{O})$, $152.7(\mathrm{OC}=\mathrm{O}), 149.9\left(i-\mathrm{C} ; \mathrm{Ph}_{\mathrm{A}}\right)$, 134.7 (i-C; $\mathrm{Ph}_{B}$ ), 129.2, ${ }^{2} 128.5,{ }^{2}$ 128.4, ${ }^{2}$ 128.0, ${ }^{2} 127.0^{1}$ and $126.9^{1}$ $(10 \times \mathrm{CH} ; 2 \times \mathrm{Ph})$, $65.5\left(\mathrm{CH}_{2} \mathrm{O}\right), 54.6(\mathrm{BnCHN}), 42.9\left(\mathrm{PhCHCH}_{3}\right)$, $37.0\left(\mathrm{CH}_{2} \mathrm{Ph}\right)$ and $18.9\left(\mathrm{PhCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+} 310.1438$. $\mathrm{C}_{19} \mathrm{H}_{20} \mathrm{NO}_{3}{ }^{+}$requires 310.1443).

### 4.12. Synthesis of 4-isopropyl-3-(2-phenylpropanoyl)oxazolidin-2-one (rac)-anti-34 and 4-isopropyl-3-(2-phenylpropanoyl)-oxazolidin-2-one (rac)-syn-34

In the same way as the oxazolidin-2-one ( rac )-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-isopropyl-oxazolidin-2-one (rac)-13 ( $0.175 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-phenylpropanoate (rac)-15 ( $0.47 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazolidin-2-ones
syn- and anti-34 (ratio $95: 5$ syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxaz-olidin-2-one (rac)-anti-34 (10 mg, 3\%) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.64 ; $v_{\max }($ film $) \mathrm{cm}^{-1} 1774(\mathrm{OC}=\mathrm{O})$ and $1701(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 7.38-7.21(5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH} ; \mathrm{Ph}), 5.15\left(1 \mathrm{H}, \mathrm{q}, \mathrm{J} 7.0, \mathrm{PhCHCH}_{3}\right)$, 4.39-4.33 (1H, dt, J 9.1 and 3.2, i-PrCHN), $4.10(1 \mathrm{H}, \mathrm{dd}, J 9.1$ and 3.2, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.02\left(1 \mathrm{H}, \mathrm{t}, J 9.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 2.46-2.38(1 \mathrm{H}, \mathrm{m}$, $\left.\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.51\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.0, \mathrm{PhCHCH}_{3}\right), 0.91(3 \mathrm{H}, \mathrm{d}, J 7.0$, $\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}$ ) and $0.90\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ $174.3(\mathrm{NC}=\mathrm{O}), 153.4(\mathrm{OC}=\mathrm{O}), 140.1$ (i-C; Ph), 128.3, ${ }^{2} 127.9^{2}$ and $126.9^{1}(5 \times \mathrm{CH} ; \mathrm{Ph}), 62.8\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.7(i-\mathrm{PrCHN}), 42.7\left(\mathrm{PhCHCH}_{3}\right)$, $28.3\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 19.5\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right), 17.7\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{B}\right)$ and 14.5 ( $\mathrm{PhCHCH}_{3}$ ) (Found $\mathrm{MH}^{+}$262.1434; $\mathrm{C}_{15} \mathrm{H}_{20} \mathrm{NO}_{3}{ }^{+}$requires 262.1443); the oxazolidin-2-one (rac)-syn- $\mathbf{3 4}$ ( $196 \mathrm{mg}, 55 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] $0.43 ; \mathrm{mp} 44-47^{\circ} \mathrm{C} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1774$ $(\mathrm{OC}=\mathrm{O})$ and $1703(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.37-7.32(3 \mathrm{H}, \mathrm{m}$, $4 \times \mathrm{CH} ; \mathrm{Ph}), 7.23-7.18(2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH} ; \mathrm{Ph}), 5.13(1 \mathrm{H}, \mathrm{q}, J 6.9$, $\left.\mathrm{PhCHCH}_{3}\right), 4.47(1 \mathrm{H}, \mathrm{dt}, J 8.9$ and $3.5, i-\mathrm{PrCHN}), 4.22(1 \mathrm{H}, \mathrm{t}, J 8.9$, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.09\left(1 \mathrm{H}\right.$, dd, J 8.9 and $\left.3.5, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 2.21-2.12(1 \mathrm{H}, \mathrm{m}$, $\left.\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.46\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{PhCHCH}_{3}\right), 0.79(3 \mathrm{H}, \mathrm{d}, J 7.0$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.44\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ $174.4(\mathrm{NC}=\mathrm{O})$, 153.4 ( $\mathrm{OC}=\mathrm{O}$ ), 140.4 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), 128.4, ${ }^{2} 127.9^{2}$ and $127.0^{1}(5 \times \mathrm{CH} ; \mathrm{Ph}), 62.8\left(\mathrm{CH}_{2} \mathrm{O}\right), 57.9(i-\mathrm{PrCHN}), 43.2$ $\left(\mathrm{PhCHCH}_{3}\right), 27.8\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 18.8\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right), 17.7\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $13.9\left(\mathrm{PhCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}$262.1432; $\mathrm{C}_{15} \mathrm{H}_{20} \mathrm{NO}_{3}{ }^{+}$requires 262.1443).
4.13. Synthesis of 4-phenyl-3-(2-phenylpropanoyl)oxazolidin-2one (rac)-anti-41 and 4-phenyl-3-(2-phenylpropanoyl)oxazoli-din-2-one (rac)-syn-41

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4 -phenyl oxazoli-din-2-one ( rac )-8 ( $0.22 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-phenylpropanoate ( rac )-13 ( $0.47 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazoli-din-2-ones syn- and anti-41 (ratio 97:3 syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti-41 ( $8 \mathrm{mg}, 2 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.58; mp $106-108{ }^{\circ} \mathrm{C}$; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.35-7.26(6 \mathrm{H}, \mathrm{m}, 6 \times \mathrm{CH}$; $\mathrm{Ph}), 7.26-7.17(4 \mathrm{H}, \mathrm{m}, 4 \times \mathrm{CH} ; \mathrm{Ph}), 5.28(1 \mathrm{H}, \mathrm{dd}, J 8.8$ and 3.2 , PhCHN), 5.06 ( $1 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{PhCHCH}_{3}$ ), 4.47 ( $1 \mathrm{H}, \mathrm{t}, J 8.8, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), $4.14\left(1 \mathrm{H}, \mathrm{dd}, J 8.8\right.$ and $\left.3.2, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{O}\right)$ and $1.35(3 \mathrm{H}, \mathrm{d}, J 7.2$, $\left.\mathrm{PhCHCH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.0(\mathrm{NC}=\mathrm{O}), 153.2(\mathrm{OC}=\mathrm{O})$, 140.1 (i-C; Ph), 139.1 (i-C; Ph), 129.2, ${ }^{2} 128.7,{ }^{1} 128.6,{ }^{2} 128.2,{ }^{2}$ $127.2^{1}$ and $125.8^{2}(10 \times \mathrm{CH} ; 2 \times \mathrm{Ph})$, $69.7\left(\mathrm{CH}_{2} \mathrm{O}\right)$, $58.1(\mathrm{PhCHN})$, $43.2\left(\mathrm{PhCHCH}_{3}\right)$ and $19.4\left(\mathrm{PhCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}$, 296.1282; $\mathrm{C}_{18} \mathrm{H}_{18} \mathrm{NO}_{3}{ }^{+}$requires 296.1287); and the oxazolidin-2-one (rac)-syn-41 ( $0.27 \mathrm{~g}, 68 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.42 ; $\mathrm{mp} 124-125^{\circ} \mathrm{C}$; $v_{\text {max }}$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and $1701(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 7.23-7.10(10 \mathrm{H}, \mathrm{m}, 10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 5.37(1 \mathrm{H}, \mathrm{dd} J 9.0$ and 5.1, PhCHN), $5.02\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{PhCHCH}_{3}\right), 4.55(1 \mathrm{H}, \mathrm{t}, J 9.0$, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.99\left(1 \mathrm{H}, \mathrm{dd}, J 9.0\right.$ and $\left.5.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$ and $1.34(3 \mathrm{H}, \mathrm{d}, J$ $\left.6.9, \mathrm{PhCHCH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 173.6(\mathrm{NC}=0), 153.1(\mathrm{OC}=\mathrm{O})$, 139.7 (i-C; Ph), 138.2 (i-C; Ph), 128.8, ${ }^{2} 128.4,{ }^{3} 128.1^{2}{ }^{2} 127.0^{1}$ and $125.8^{2}(10 \times \mathrm{CH} ; 2 \times \mathrm{Ph})$, $69.5\left(\mathrm{CH}_{2} \mathrm{O}\right), 57.8(\mathrm{PhCHN}), 43.9$ $\left(\mathrm{PhCHCH}_{3}\right)$ and $18.6\left(\mathrm{PhCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}, ~ 296.1286 ;$ $\mathrm{C}_{15} \mathrm{H}_{18} \mathrm{NO}_{3}{ }^{+}$requires 296.1287).
4.14. Synthesis of ethyl 2-oxa-3-(2-phenylpropanoyl)oxazolidin-4-carboxylate (rac)-anti-46 and ethyl 2-oxa-3-(2-phenylpropa-noyl)oxazolidin-4-carboxylate (rac)-syn-46

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), ethyl oxazolidin-2-one 4-carboxylate (rac)-14 ( $0.40 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-phenylpropanoate ( rac )-15 ( $0.21 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazoli-din-2-ones syn- and anti-46 (ratio 95:5 syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxazolidin-2-one (rac)-anti-46 (12 mg, 3\%) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.42; $v_{\text {max }}$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1794(\mathrm{OC}=\mathrm{O}), 1747(\mathrm{CC}=0)$ and $1705(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.33-7.20(5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH} ; \mathrm{Ph}), 5.10(1 \mathrm{H}, \mathrm{q}, \mathrm{J}$ 7.0, $\mathrm{PhCHCH}_{3}$ ), $4.77\left(1 \mathrm{H}, \mathrm{dd}, J 9.2\right.$ and $\left.3.5, \mathrm{EtO}_{2} \mathrm{CCHN}\right), 4.38(1 \mathrm{H}, \mathrm{t}$, $\left.J 9.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.29\left(1 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{CH}_{3} \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.28(1 \mathrm{H}, \mathrm{q}, J 7.2$, $\mathrm{CH}_{3} \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), $4.26\left(1 \mathrm{H}, \mathrm{dd}, J 9.2\right.$ and $\left.3.5, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 1.50(3 \mathrm{H}, \mathrm{d}, J$ 7.0, $\mathrm{PhCHCH}_{3}$ ) and $1.30\left(3 \mathrm{H}, \mathrm{t}, \mathrm{J} 7.2, \mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{O}\right)$; $\delta_{\mathrm{c}}(100 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 174.5(\mathrm{NC}=\mathrm{O}), 168.7(\mathrm{CC}=\mathrm{O}), 152.1(\mathrm{OC}=\mathrm{O}), 140.0$ ( $i-\mathrm{C}$; $\mathrm{Ph}), 128.7,{ }^{2} 128.3^{2}$ and $127.4^{1}(5 \times \mathrm{CH}$; Ph $), 64.3\left(\mathrm{CH}_{2} \mathrm{O}\right), 62.6$ $\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.9\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 43.0\left(\mathrm{PhCHCH}_{3}\right), 19.3\left(\mathrm{PhCHCH}_{3}\right)$ and $14.1\left(\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{O}\right)$ (Found $\mathrm{MH}^{+}, 292.1195 ; \mathrm{C}_{15} \mathrm{H}_{18} \mathrm{NO}_{5}{ }^{+}$requires 292.1185); and the oxazolidin-2-one (rac)-syn-46 ( $236 \mathrm{mg}, 60 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.30; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1793$ ( $\mathrm{OC}=0$ ), 1747 ( $\mathrm{CC}=\mathrm{O}$ ) and $1705(\mathrm{NC}=0) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.40-7.20(5 \mathrm{H}, \mathrm{m}$, $5 \times \mathrm{CH}$; Ph ), $5.03\left(1 \mathrm{H}, \mathrm{q}, J 7.0, \mathrm{PhCHCH}_{3}\right), 4.94(1 \mathrm{H}, \mathrm{dd}, J 9.3$ and 4.9, $\left.\mathrm{EtO}_{2} \mathrm{CCHN}\right), 4.52\left(1 \mathrm{H}, \mathrm{t}, J 9.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.23(1 \mathrm{H}, \mathrm{dd}, J 9.3$ and $\left.4.9, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.11\left(2 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{O}\right), 1.48(3 \mathrm{H}, \mathrm{d}, J 7.0$, $\left.\mathrm{PhCHCH}_{3}\right)$ and $1.11\left(3 \mathrm{H}, \mathrm{t}, J 7.2, \mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{O}\right)$; $\delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ 174.1 ( $\mathrm{NC}=\mathrm{O}$ ), 167.9 ( $\mathrm{CC}=\mathrm{O}$ ), 151.8 ( $\mathrm{OC}=\mathrm{O}$ ), 139.6 ( $i-\mathrm{C}$; Ph), $128.4,{ }^{2} 128.1^{2}$ and $127.1^{1}(5 \times \mathrm{CH}$; Ph $), 64.1\left(\mathrm{CH}_{2} \mathrm{O}\right), 62.3\left(\mathrm{CH}_{2} \mathrm{O}\right)$, $55.6\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 43.0\left(\mathrm{PhCHCH}_{3}\right), 19.2\left(\mathrm{PhCHCH}_{3}\right)$ and 13.7 $\left(\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{O}\right)$ (Found $\mathrm{MH}^{+}, \quad 292.1195 ; \mathrm{C}_{15} \mathrm{H}_{18} \mathrm{NO}_{5}{ }^{+}$requires 292.1185).
4.15. Synthesis of 4-methyl-5-phenyl-3-(2-phenylbutanoyl)-oxazolidin-2-one (rac)-anti,syn-21 and 4-methyl-5-phenyl-3-(2-phenylbutanoyl)oxazolidin-2-one (rac)-syn,syn-21

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )( $4 R S, 5 S R$ )- $\mathbf{1 1}(0.24 \mathrm{~g}, 1.36 \mathrm{mmol})$ and pentafluorophenyl 2-phenylbutanoate (rac)-16(0.49 g, 1.50 mmol$)$, gave a separable mixture of two diastereoisomeric oxazolidin-2-ones 21 (ratio: 77:23 syn,syn-:syn,anti-). The crude residue was purified by flash column chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxazolidin-2-one (rac)-anti,syn-21 ( $65 \mathrm{mg}, 15 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.75; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ $1782(\mathrm{OC}=\mathrm{O})$ and $1697(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.44-7.24$ $(10 \mathrm{H}, \mathrm{m}, 10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 5.49(1 \mathrm{H}, \mathrm{d}, J 7.2, \mathrm{PhCHO}), 4.97(1 \mathrm{H}, \mathrm{t}$, $J 7.5$, PhCHEt), 4.69 ( $1 \mathrm{H}, \mathrm{m}$ (appears as a br quintet, $J 7.2$ ), $\mathrm{CH}_{3} \mathrm{CHN}$ ), 2.14 ( 1 H , ddq, $J 13.4,7.5$ and $7.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}$ ), $1.84(1 \mathrm{H}$, ddq, J 13.4, 7.5 and $\left.7.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right), 0.92\left(3 \mathrm{H}, \mathrm{d}, J 6.7, \mathrm{CH}_{3} \mathrm{CHN}\right)$ and $0.89(3 \mathrm{H}, \mathrm{t}$, $\left.J 7.3, \mathrm{CH}_{2} \mathrm{CH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.4(\mathrm{NC}=\mathrm{O}), 153.1(\mathrm{OC}=\mathrm{O})$, 139.2 (i-C; Ph), 133.6 (i-C; Ph), 128.6, ${ }^{1} 128.6,{ }^{4} 128.5,{ }^{2} 127.3^{1}$ and $125.6^{2}\left(10 \times \mathrm{CH} ; \mathrm{Ph}_{\mathrm{A}}\right.$ and $\left.\mathrm{Ph}_{\mathrm{B}}\right), 78.9(\mathrm{PhCHO}), 55.7\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$, 50.8 ( PhCHEt ), $27.7\left(\mathrm{PhCHCH}_{2} \mathrm{CH}_{3}\right), 14.9\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$ and 12.4 $\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MH}^{+}, 324.1585 ; \mathrm{C}_{20} \mathrm{H}_{22} \mathrm{NO}_{3}$ requires 324.1600); and the oxazolidin-2-one (rac)-syn,syn-21 ( $0.23 \mathrm{~g}, 53 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] $0.63 ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and $1697(\mathrm{NC}=0) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.40-7.18(10 \mathrm{H}, \mathrm{m}, 10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 5.65(1 \mathrm{H}$,
d, J 7.5, PhCHO), 4.89-4.77 (2H, m, $2 \times$ PhCHEt and $\mathrm{CH}_{3} \mathrm{CHN}$ ), 2.11 (1H, ddq, $J$ 13.4, 7.5 and $7.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}$ ), 1.84 (1H, ddq, $J$ 13.4, 7.5 and 7.4, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right), 0.91\left(3 \mathrm{H}, \mathrm{t}, J 7.4, \mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ and $0.71(3 \mathrm{H}, \mathrm{d}, J$ $\left.6.6, \mathrm{CH}_{3} \mathrm{CHN}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 173.6(\mathrm{NC}=\mathrm{O})$, $152.5(\mathrm{OC}=\mathrm{O})$, $138.4\left(i-\mathrm{C} ; \mathrm{Ph}_{\mathrm{A}}\right), 133.3\left(i-\mathrm{C} ; \mathrm{Ph}_{\mathrm{B}}\right), 128.6,{ }^{1} 128.5,{ }^{4} 128.4,{ }^{2} 127.1^{1}$ and $125.6^{2}\left(10 \times \mathrm{CH} ; \mathrm{Ph}_{\mathrm{A}}\right.$ and $\left.\mathrm{Ph}_{\mathrm{B}}\right)$, $78.6(\mathrm{PhCHO}), 54.6\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$, 50.9 (PhCHEt), $27.1\left(\mathrm{PhCHCH}_{2} \mathrm{CH}_{3}\right), 14.0\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$ and 12.0 $\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MH}^{+}, 324.1583 ; \mathrm{C}_{20} \mathrm{H}_{22} \mathrm{NO}_{3}$ requires 324.1600).

### 4.16. Synthesis of 4-benzyl-3-(2-phenylbutanoyl)oxazolidine-2one (rac)-anti-28 and 4-benzyl-3-(2-phenylbutanoyl)oxazoli-dine-2-one (rac)-syn-28

In the same way as the oxazolidin-2-one (rac)-20, $n$ - $\operatorname{BuLi}(1.6 \mathrm{~mL}$, 2.5 M in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-12 ( 0.24 g , 1.36 mmol ) and pentafluorophenyl 2-phenylbutanoate (rac)-16 ( $0.49 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones $\mathbf{2 8}$ (ratio: 68:32 syn-:anti-). The crude residue was purified by flash column chromatography on silica gel eluting light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxazolidin-2-one (rac)-anti-28 ( $0.10 \mathrm{~g}, 22 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ( $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.70; $v_{\max }$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=0)$ and $1691(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ 7.41-7.22 ( $10 \mathrm{H}, \mathrm{m}, 10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}$ ), $4.95(1 \mathrm{H}, \mathrm{t}, J 7.5, \mathrm{PhCHEt})$, $4.64-4.55(1 \mathrm{H}, \mathrm{m}, \mathrm{BnCHN}), 4.12-4.00\left(2 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{2} \mathrm{O}\right), 3.37$ ( $1 \mathrm{H}, \mathrm{dd}, J$ 13.3 and $\left.3.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right)$, $2.79\left(1 \mathrm{H}\right.$, dd, $J 13.3$ and $\left.9.8, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right)$, 2.17 ( $1 \mathrm{H}, \mathrm{ddq}, J 13.4,7.5$ and $7.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}$ ), $1.88(1 \mathrm{H}, \mathrm{ddq}, J 13.4$, 7.5 and $\left.7.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right)$ and $0.93\left(3 \mathrm{H}, \mathrm{t}, J 7.3, \mathrm{CH}_{2} \mathrm{CH}_{3}\right) ; \delta_{\mathrm{C}}$ ( $100 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $174.2(\mathrm{NC}=\mathrm{O}), 153.0(\mathrm{OC}=\mathrm{O}), 138.7\left(i-\mathrm{C} ; \mathrm{Ph}_{\mathrm{A}}\right)$, $135.4\left(i-\mathrm{C} ; \mathrm{Ph}_{\mathrm{B}}\right), 129.5,{ }^{2} 129.0,{ }^{2} 128.7,{ }^{2} 128.6,{ }^{2} 127.5^{1}$ and $127.4^{1}$ $\left(10 \times \mathrm{CH} ; \mathrm{Ph}_{\mathrm{A}}\right.$ and $\left.\mathrm{Ph}_{\mathrm{B}}\right), 65.8\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.8(\mathrm{BnCHN}), 50.4$ (PhCHEt), $38.1\left(\mathrm{CH}_{2} \mathrm{Ph}\right)$, $27.5\left(\mathrm{PhCHCH}_{2} \mathrm{CH}_{3}\right)$ and $12.1\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MH}^{+}$, 324.1612; $\mathrm{C}_{20} \mathrm{H}_{22} \mathrm{NO}_{3}$ requires 324.1600); and the oxazolidin-2one ( rac )-syn- $28\left(0.22 \mathrm{~g}, 50 \%\right.$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.55 ; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ $1778(\mathrm{OC}=\mathrm{O})$ and $1691(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.46-6.91$ ( $10 \mathrm{H}, \mathrm{m}, 10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}$ ), 4.91 ( $1 \mathrm{H}, \mathrm{t}, \mathrm{J} 7.6$, PhCHEt), 4.81-4.71 ( $1 \mathrm{H}, \mathrm{m}, \mathrm{BnCHN}$ ), 4.19 ( $1 \mathrm{H}, \mathrm{brt}$, J 8.8, $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), 4.08 ( $1 \mathrm{H}, \mathrm{dd}, J 8.8$ and $\left.3.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.05\left(1 \mathrm{H}, \mathrm{dd}, \mathrm{J} 13.5\right.$ and $\left.3.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right), 2.59(1 \mathrm{H}$, dd, 13.5 and $\left.8.7, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{Ph}\right), 2.15(1 \mathrm{H}, \mathrm{ddq}, J 13.4,7.5$ and 7.3 , $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right), 1.86\left(1 \mathrm{H}, \mathrm{ddq}, J 13.4,7.5\right.$ and $\left.7.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right)$ and 0.90 (3H, t, J 7.4, $\mathrm{CH}_{2} \mathrm{CH}_{3}$ ); $\delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.0(\mathrm{NC}=0), 153.0$ (OC=O), $138.5\left(i-\mathrm{C} ; \mathrm{Ph}_{\mathrm{A}}\right), 134.9\left(i-\mathrm{C} ; \mathrm{Ph}_{\mathrm{B}}\right), 129.5,{ }^{2} 128.9,{ }^{2} 128.6,{ }^{2}$ 128.3, ${ }^{2} 127.3^{1}$ and $127.2^{1}\left(10 \times \mathrm{CH} ; \mathrm{Ph}_{\mathrm{A}}\right.$ and $\left.\mathrm{Ph}_{\mathrm{B}}\right), 65.7\left(\mathrm{CH}_{2} \mathrm{O}\right)$, 54.9 (BnCHN), 50.6 ( PhCHEt ), $37.4\left(\mathrm{CH}_{2} \mathrm{Ph}\right), 27.0\left(\mathrm{PhCHCH}_{2} \mathrm{CH}_{3}\right)$ and $12.1\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MH}^{+} 324.1585 ; \mathrm{C}_{16} \mathrm{H}_{22} \mathrm{NO}_{3}$ requires 324.1600).
4.17. Synthesis of 4-isopropyl-3-(2-phenylbutanoyl)oxazolidin-2-one (rac)-anti-35 and 4-isopropyl-3-(2-phenylbutanoyl)oxaz-olidin-2-one (rac)-syn-35

In the same way as oxazolidin-2-one (rac)-20, $n$-BuLi $(0.6 \mathrm{~mL}$, 2.5 M in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-13 ( 0.17 g , 1.36 mmol ) and pentafluorophenyl 2-phenylbutanoate (rac)-16 ( $0.49 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a mixture of two separable diastereoisomeric oxazolidin-2-ones $\mathbf{3 5}$ (ratio: 95:5 syn-:anti-). The crude residue was purified by flash column chromatography on a silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti- 35 ( $11 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum (40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.63 ; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and $1697(\mathrm{NC}=0) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.40-7.35(2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH} ; \mathrm{Ph}), 7.28-7.19(3 \mathrm{H}$, $\mathrm{m}, 3 \times \mathrm{CH} ; \mathrm{Ph}), 4.98$ ( $1 \mathrm{H}, \mathrm{t}, J 7.5$, PhCHEt), $4.40-4.34(1 \mathrm{H}, \mathrm{m}, i-$ PrCHN $), 4.17-4.07\left(2 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{2} \mathrm{O}\right), 2.49-2.38\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$, 2.15 ( 1 H , ddq, $J 13.4,7.5$ and $7.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}$ ), 1.82 ( 1 H , ddq, $J$
13.4, 7.5 and 7.4, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right), 0.85\left(3 \mathrm{H}, \mathrm{d}, J 7.0, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) 0.84$ $\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.82\left(3 \mathrm{H}, \mathrm{t}, J 7.4, \mathrm{CH}_{3} \mathrm{CH}_{2}\right) ; \delta_{\mathrm{C}}$ ( $100 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 174.1 ( $\mathrm{NC}=0$ ), 153.6 ( $\mathrm{OC}=0$ ), 138.6 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), $128.6{ }^{2} 128.4^{2}$ and $127.1^{1}(5 \times \mathrm{CH}$; Ph $)$, $62.8\left(\mathrm{CH}_{2} \mathrm{O}\right)$, 58.3 (iPrCHN ), 50.1 (PhCHEt), $28.4\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 27.7\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right), 17.9$ $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) 14.5\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $12.0\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MH}^{+}$, 276.1612; $\mathrm{C}_{16} \mathrm{H}_{22} \mathrm{NO}_{3}$ requires 276.1600); and the oxazolidin-2one (rac)-syn-35 ( $0.22 \mathrm{~g}, 59 \%$ ) as an oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.53; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778$ $(\mathrm{OC}=\mathrm{O})$ and $1697(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.39-7.36(2 \mathrm{H}$, $\mathrm{m}, 2 \times \mathrm{CH} ; \mathrm{Ph}), 7.32-7.21(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH} ; \mathrm{Ph}), 4.94(1 \mathrm{H}, \mathrm{t}, \mathrm{J} 7.5$, PhCHEt), 4.52-4.47 (1H, m, $i$-PrCHN), 4.24 ( $1 \mathrm{H}, \mathrm{t}, J 9.0, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), $4.1\left(1 \mathrm{H}, \mathrm{dd}, J 9.0\right.$ and $\left.3.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 2.21-2.15\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$, 2.10 ( 1 H , ddq, $J$ 13.4, 7.5 and $7.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}$ ), 1.81 ( 1 H , ddq, $J$ 13.4, 7.5 and $\left.7.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right), 0.87\left(3 \mathrm{H}, \mathrm{t}, J 7.4, \mathrm{CH}_{3} \mathrm{CH}_{2}\right), 0.78$ ( $3 \mathrm{H}, \mathrm{d}, J 7.0, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}$ ) and $0.42\left(3 \mathrm{H}, \mathrm{d}, J 7.0, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}$ ( $100 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 174.0 ( $\mathrm{NC=O}$ ), 153.5 ( $\mathrm{OC=O)}$,138.9 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), $128.6,{ }^{2} 128.5^{2}$ and $127.2^{1}(5 \times \mathrm{CH}$; Ph), 62.9 ( $i$ - PrCHN ), 58.1 $\left(\mathrm{CH}_{2} \mathrm{O}\right), 50.7$ (PhCHEt), $27.9\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 26.4\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right), 17.8$ $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right), 14.0\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $12.0\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MH}^{+}$, 276.1587; $\mathrm{C}_{16} \mathrm{H}_{22} \mathrm{NO}_{3}$ requires 276.1600).
4.18. Synthesis of 4-phenyl-3-(2-phenylbutanoyl)oxazolidin-2one (rac)-anti-42 and 4-phenyl-3-(2-phenylbutanoyl)oxazoli-din-2-one (rac)-syn-42

In the same way as the oxazolidin-2-one ( rac ) -20, $n-\mathrm{BuLi}(0.6 \mathrm{~mL}$, 2.5 M in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-8 ( 0.22 g , 1.36 mmol ) and pentafluorophenyl 2-phenylbutanoate ( rac )-16 ( $0.49 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones 42 (ratio: >98:2 syn-:anti-). The crude residue was purified by flash column chromatography on a silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti-42 ( $5 \mathrm{mg}, 1 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.55; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0), 1703(\mathrm{NC}=\mathrm{O})$ and $1600(\mathrm{Ph}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.44-7.21(10 \mathrm{H}, \mathrm{m}, 10 \times \mathrm{CH}$; $2 \times \mathrm{Ph}), 5.34(1 \mathrm{H}, \mathrm{dd}, J 8.7$ and $3.4, \mathrm{PhCHN}), 4.96(1 \mathrm{H}, \mathrm{t}, J 7.5$, PhCHEt), 4.54 ( 1 H, br t, $J 8.7, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), $4.20\left(1 \mathrm{H}, \mathrm{dd}, J 8.7\right.$ and $3.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), $2.01\left(1 \mathrm{H}, \mathrm{ddq}, J 13.5,7.5\right.$ and $\left.7.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right), 1.74(1 \mathrm{H}, \mathrm{ddq}, J 13.5$, 7.5 and $\left.7.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right)$ and $0.76\left(3 \mathrm{H}, \mathrm{t}, \mathrm{J} 7.4, \mathrm{CH}_{2} \mathrm{CH}_{3}\right) ; \delta_{\mathrm{C}}$ ( $100 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $173.7(\mathrm{NC}=0)$, 153.4 ( $\mathrm{OC}=0$ ), 139.5 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), 138.6 (i-C; Ph), 129.1, ${ }^{2} 128.8,{ }^{2} 128.7,{ }^{1} 128.5,{ }^{2} 127.3^{1}$ and $125.8^{2}$ $\left(10 \times \mathrm{CH} ; \mathrm{Ph}_{\mathrm{A}}\right.$ and $\left.\mathrm{Ph}_{\mathrm{B}}\right), 69.4\left(\mathrm{CH}_{2} \mathrm{O}\right)$, $58.1(\mathrm{PhCHN}), 50.4(\mathrm{PhCHEt})$, $27.7\left(\mathrm{CH}_{2} \mathrm{Ph}\right)$ and $12.0\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MH}^{+}, 310.1430$; $\mathrm{C}_{19} \mathrm{H}_{20} \mathrm{NO}_{3}$ requires 310.1443); and the oxazolidin-2-one (rac)-syn-42 ( $0.29 \mathrm{~g}, 69 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.50; mp 58-62 ${ }^{\circ} \mathrm{C}$; $v_{\text {max }}$ (film) $\mathrm{cm}^{-1}$ $1780(\mathrm{OC}=\mathrm{O})$ and $1703(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.27-7.19$ ( $6 \mathrm{H}, \mathrm{m}, 6 \times \mathrm{CH} ; 2 \times \mathrm{Ph}$ ), 7.14-7.12 ( $2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH}$; Ph), 6.91-6.89 $(2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH} ; \mathrm{Ph}), 5.46$ (1H, dd, J 8.9 and 5.0, PhCHN), $4.90(1 \mathrm{H}, \mathrm{t}$, J 7.5, PhCHEt), 4.63 ( $1 \mathrm{H}, \mathrm{t}, J 8.9, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), $4.07(1 \mathrm{H}, \mathrm{dd}, J 8.9$ and $\left.5.0, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 2.04\left(1 \mathrm{H}, \mathrm{ddq}, J 13.5,7.5\right.$ and $\left.7.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right), 1.71$ ( 1 H, ddq, $J 13.5,7.5$ and $7.4, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{CH}_{3}$ ) and $0.87(3 \mathrm{H}, \mathrm{t}, J 7.4$, $\left.\mathrm{CH}_{2} \mathrm{CH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 173.2(\mathrm{NC}=\mathrm{O}), 153.2(\mathrm{OC}=\mathrm{O}), 138.4$ $\left(i-\mathrm{C} ; \mathrm{Ph}_{\mathrm{A}}\right), 138.1\left(i-\mathrm{C} ; \mathrm{Ph}_{\mathrm{B}}\right), 128.9,{ }^{2} 128.8,{ }^{2} 128.4,{ }^{1} 128.3,{ }^{2} 127.1^{1}$ and $125.6^{2}\left(10 \times \mathrm{CH} ; \mathrm{Ph}_{\mathrm{A}}\right.$ and $\left.\mathrm{Ph}_{\mathrm{B}}\right), 69.6\left(\mathrm{CH}_{2} \mathrm{O}\right), 57.8(\mathrm{PhCHN})$, 51.2 (PhCHEt), $26.3\left(\mathrm{CH}_{2} \mathrm{Ph}\right)$ and $12.0\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MH}^{+}$, 310.1437; $\mathrm{C}_{19} \mathrm{H}_{20} \mathrm{NO}_{3}$ requires 310.1443 ).
4.19. Synthesis of ethyl 2-oxa-3-(2-phenylbutanoyl)oxazolidin-4-carboxylate (rac)-anti-47 and ethyl 2-oxa-3-(2-phenylbuta-noyl)oxazolidin-4-carboxylate (rac)-syn-47

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-14
( $0.21 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-phenylbutanoate ( rac )-16 ( $0.49 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones 47 (ratio: 96:4 syn-:anti-). The crude residue was purified by flash column chromatography on a silica gel eluting with light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxazolidin-2-one (rac)-anti-47 ( $11 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.48; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1790(\mathrm{OC}=0), 1747(\mathrm{CC}=0)$ and $1705(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.32-7.27(2 \mathrm{H}, \mathrm{m}$, $2 \times \mathrm{CH} ; \mathrm{Ph}), 7.25-7.14(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH} ; \mathrm{Ph}), 4.94(1 \mathrm{H}, \mathrm{t}, J 7.5$, PhCHEt), 4.79 ( $1 \mathrm{H}, \mathrm{dd}, J 9.4$ and $\left.3.5, \mathrm{EtO}_{2} \mathrm{CCHN}\right), 4.40(1 \mathrm{H}, \mathrm{t}, J 9.3$, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.29\left(2 \mathrm{H}, \mathrm{q}, J 7.1, \mathrm{OCH}_{2} \mathrm{CH}_{3}\right), 4.24(1 \mathrm{H}, \mathrm{dd}, J 9.3$ and 3.5 , $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), 2.21-2.08 (1H, ddq, J 13.4, 7.5 and $7.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}$ ), 1.87-1.74 (1H, ddq, J 13.4, 7.5 and 7.4, $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}$ ), $1.30(3 \mathrm{H}, \mathrm{t}, J$ 7.1, $\mathrm{OCH}_{2} \mathrm{CH}_{3}$ ) and $0.91\left(3 \mathrm{H}, \mathrm{t}, J 7.4, \mathrm{CH}_{2} \mathrm{CH}_{3} ;\right.$ PhCHEt $) ; \delta_{\mathrm{C}}$ ( $100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $174.1(\mathrm{NC}=\mathrm{O})$, $168.6(\mathrm{CC}=\mathrm{O}), 152.2(\mathrm{OC}=\mathrm{O})$, $138.5\left(i-\mathrm{C} ; \mathrm{Ph}_{\mathrm{A}}\right), 128.8,{ }^{2} 128.6^{2}$ and $127.5^{1}(5 \times \mathrm{CH}$; Ph), 64.2 $\left(\mathrm{CH}_{2} \mathrm{O}\right), 62.6\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.9\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 50.2$ (PhCHEt), 27.5 ( $\mathrm{PhCHCH} 2 \mathrm{CH}_{3}$ ), $14.1\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$ and $12.0\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right.$; PhCHEt) (Found $\mathrm{M}^{+}, 305.1258 ; \mathrm{C}_{16} \mathrm{H}_{19} \mathrm{NO}_{5}$ requires 305.1258 ); and the oxazolidin-2-one ( rac )-syn- $47(0.27 \mathrm{~g}, 65 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $\left.40-60^{\circ} \mathrm{C}\right) /$ diethyl ether (1:1)] 0.38; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1790(\mathrm{OC}=\mathrm{O}), 1747(\mathrm{CC}=\mathrm{O})$ and $1701(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.36-7.23(5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH} ; \mathrm{Ph}), 4.94(1 \mathrm{H}, \mathrm{dd}, J$ 9.4 and $4.7, \mathrm{EtO}_{2} \mathrm{CCHN}$ ), $4.82(1 \mathrm{H}, \mathrm{t}, J 7.5, \mathrm{PhCHEt}), 4.51(1 \mathrm{H}, \mathrm{t}, J$ $\left.9.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.23\left(1 \mathrm{H}\right.$, dd, $J 9.4$ and $\left.4.7, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.07(2 \mathrm{H}, \mathrm{q}, J$ 7.1, $\mathrm{OCH}_{2} \mathrm{CH}_{3}$ ), 2.14-2.01 ( 1 H , ddq, $J$ 13.4, 7.5 and $7.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}$ ), 1.86-1.75 (1H, ddq, J 13.4, 7.5 and $7.4, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{CH}_{3}$ ), $1.06(3 \mathrm{H}, \mathrm{t}, J 7.1$, $\mathrm{OCH}_{2} \mathrm{CH}_{3}$ ) and $0.87\left(3 \mathrm{H}, \mathrm{t}, \mathrm{J} 7.4, \mathrm{CH}_{2} \mathrm{CH}_{3}\right.$; PhCHEt); $\delta_{\mathrm{C}}(100.6 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 173.7(\mathrm{NC}=\mathrm{O}), 168.1(\mathrm{CC}=\mathrm{O}), 152.1(\mathrm{OC}=\mathrm{O}), 138.0(i-\mathrm{C} ; \mathrm{Ph})$, $128.9{ }^{2} 128.6^{2}$ and $127.3^{1}(5 \times \mathrm{CH} ; \mathrm{Ph}), 64.2\left(\mathrm{CH}_{2} \mathrm{O}\right), 62.3\left(\mathrm{CH}_{2} \mathrm{O}\right)$, 55.7 ( $\mathrm{EtO}_{2} \mathrm{CCHN}$ ), 50.5 ( PhCHEt ), $27.3\left(\mathrm{PhCHCH}_{2} \mathrm{CH}_{3}\right), 13.8$ $\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$ and $12.1\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right.$; PhCHEt) (Found $\mathrm{M}^{+}$, 305.1256; $\mathrm{C}_{16} \mathrm{H}_{19} \mathrm{NO}_{5}$ requires 305.1258).
4.20. Synthesis of 4-methyl-5-phenyl-3-[2-phenyl-3-methyl-butanoyl]oxazolidin-2-one (rac)-anti,syn-22 and 4-methyl-5-phenyl-3-[2-phenyl-3-methylbutanoyl]oxazolidin-2-one (rac)-syn,syn-22

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-methyl-5-phenyl-oxazolidin-2-one (rac)-(4RS,5SR)-11 ( $0.24 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-phenyl-3-methylbutanoate (rac)-17 ( 0.52 g , 1.50 mmol ), gave the oxazolidin-2-ones syn,syn- and anti,syn-22 (ratio 73:27:syn,syn-:syn,anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2one (rac)-anti,syn-22 ( $68 \mathrm{mg}, 15 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.71 ; $\mathrm{mp} 98-100^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and $1697(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.35-7.16(10 \mathrm{H}, \mathrm{m}, 10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 5.41$ (1H, d, J 7.2, CHOPh), 4.74 (1H, d, J 10.6, PhCHi-Pr), 4.63 ( $1 \mathrm{H}, \mathrm{dq}$, $J 6.7$ and $\left.6.6, \mathrm{CH}_{3} \mathrm{CHN}\right), 2.42\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 0.97(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.7$, $\mathrm{CH}_{3} \mathrm{CHN}$ ), $0.87\left(3 \mathrm{H}, \mathrm{d}, J 6.6, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.59(3 \mathrm{H}, \mathrm{d}, J 6.8$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.1(\mathrm{NC}=0), 152.7(\mathrm{OC}=0)$, 138.2 (i-C; Ph), 133.3 (i-C; Ph), 129.1, ${ }^{2} 128.7,{ }^{1} 128.6,{ }^{2} 128.5,{ }^{2}$ $127.4^{1}$ and $125.6^{2}(10 \times \mathrm{CH} ; 2 \times \mathrm{Ph})$, $78.4(\mathrm{OCHPh}), 55.9\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$, 55.2 ( $\mathrm{PhCHi}-\mathrm{Pr}), \quad 32.4\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 21.4\left(\mathrm{CCH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right), 20.1$ $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $14.6\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$; (Found $\mathrm{MNH}_{4}{ }^{+}, 355.2018$; $\mathrm{C}_{21} \mathrm{H}_{27} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 355.2016$ ); and the oxazolidin-2one (rac)-syn,syn-22 ( $0.185 \mathrm{~g}, 40 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.66; $\mathrm{mp} 100-103^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=0)$ and 1701 $(\mathrm{NC}=0) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.34-7.13(10 \mathrm{H}, \mathrm{m}, 10 \times \mathrm{CH}$; $2 \times \mathrm{Ph}), 5.58(1 \mathrm{H}, \mathrm{d}, J 7.5, \mathrm{CH}, \mathrm{OCHPh}), 4.74(1 \mathrm{H}, \mathrm{dq}, J 6.7$ and 6.6 ,
$\left.\mathrm{CH}_{3} \mathrm{CHN}\right), 4.59(1 \mathrm{H}, \mathrm{d}, \mathrm{J} 10.6, \mathrm{PhCHi}-\mathrm{Pr}), 2.38\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$, $1.00\left(3 \mathrm{H}, \mathrm{d}, J 6.7, \mathrm{CH}_{3} \mathrm{CHN}\right), 0.64\left(3 \mathrm{H}, \mathrm{d}, J 6.8, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.59\left(3 \mathrm{H}, \mathrm{d}, J 6.8, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 173.7(\mathrm{NC}=\mathrm{O})$, 152.6 ( $\mathrm{OC}=\mathrm{O}$ ), 137.7 (i-C; Ph), 133.3 (i-C; Ph), 129.1, ${ }^{2}$ 128.7, ${ }^{1}$ $128.6,{ }^{2} 128.4{ }^{2} 127.2^{1}$ and $125.6^{2}(10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 78.6$ (OCHPh), $56.7 \quad\left(\mathrm{CH}_{3} \mathrm{CHN}\right), \quad 54.8 \quad(\mathrm{PhCHi}-\mathrm{Pr}), \quad 31.9 \quad\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), \quad 21.7$ $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right), 20.2\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $14.0\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$ (Found $\mathrm{MH}^{+}$, $338.1740 ; \mathrm{C}_{21} \mathrm{H}_{24} \mathrm{NO}_{3}{ }^{+}$requires $\mathrm{MH}^{+} 338.1751$ ).

### 4.21. Synthesis of 4-benzyl-3-[2-phenyl-3-methylbutanoyl]-oxazolidin-2-one (rac)-anti,syn-29 and 4-benzyl-3-[2-phenyl-3-methylbutanoyl]oxazolidin-2-one (rac)-syn,syn-29

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-benzyl-oxazoli-din-2-one ( rac )-12 $(0.24 \mathrm{~g}, 1.36 \mathrm{mmol})$ and pentafluorophenyl 2-phenyl-3-methylbutanoate ( rac )-17 ( $0.51 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazolidin-2-ones syn- and anti-29 (ratio: 66:34 syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti- 29 ( $62 \mathrm{mg}, 14 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ( $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.63 ; \mathrm{mp} 87-89^{\circ} \mathrm{C} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=\mathrm{O})$ and 1710 $(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.42-7.39(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and 1.2, $2 \times \mathrm{CH} ; \mathrm{Ph}), 7.35-7.20(8 \mathrm{H}, \mathrm{m}, 8 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 4.78(1 \mathrm{H}, \mathrm{d}, J$ 10.6, PhCHi-Pr), $4.61-4.52$ ( $1 \mathrm{H}, \mathrm{m}, i-\mathrm{PrCHN}$ ), 4.07 ( 1 H , br dd, J 9.0 and 2.6, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.00\left(1 \mathrm{H}, \mathrm{t}, J 9.0, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{O}\right), 3.39(1 \mathrm{H}, \mathrm{dd}, J 13.3$ and 3.3, $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}$ ), 2.73 ( 1 H , dd, $J 13.3$ and 10.1, $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}$ ), 2.53$2.46\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.09\left(3 \mathrm{H}, \mathrm{d}, J 6.4, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and 0.72 (3H, d, J 6.8, $\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}$ ); $\delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.2(\mathrm{NC}=\mathrm{O})$, 153.1 (OC=O), 138.0 (i-C; Ph), 135.4 (i-C; Ph), 129.4², 129.2 ${ }^{2}$, $129.0^{2}, 128.5^{2}, 127.4^{1}$ and $127.3^{1}(10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 65.6\left(\mathrm{CH}_{2} \mathrm{O}\right)$, 55.9 ( BnCHN ), 55.8 ( $\mathrm{PhCHi}-\mathrm{Pr}$ ), $38.1\left(\mathrm{PhCH}_{2}\right), 32.5\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$, $21.5\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $20.2\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ (Found $\mathrm{MNH}_{4}^{+}$, 355.2019; $\mathrm{C}_{21} \mathrm{H}_{27} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 355.2016$ ); and the oxaz-olidin-2-one (rac)-syn-29 ( $0.12 \mathrm{~g}, 26 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.40 ; v_{\max }$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1773(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 7.39(2 \mathrm{H}, \mathrm{dt}, J 7.0$ and $1.7,2 \times \mathrm{CH} ; \mathrm{Ph}), 7.28(2 \mathrm{H}, \mathrm{tt}, J 7.0$ and $1.2,2 \times \mathrm{CH}$; Ph $), 7.22(1 \mathrm{H}, J 7.2$ and $1.5,1 \times \mathrm{CH}$; Ph), 7.12$7.05(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH} ; \mathrm{Ph}), 6.80(2 \mathrm{H}, \mathrm{dt}, J 6.2$ and $1.8,2 \times \mathrm{CH} ; \mathrm{Ph})$, 4.73-4.66 (1H, m, BnCHN), 4.65 ( $1 \mathrm{H}, \mathrm{d}, \mathrm{J} 10.8$, PhCHi-Pr), 4.13 $\left(1 \mathrm{H}, \mathrm{t}, J 9.0, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.01\left(1 \mathrm{H}, \mathrm{dd}, J 9.0\right.$ and $\left.2.8, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 2.89$ ( $1 \mathrm{H}, \mathrm{dd}, J 13.6$ and $3.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}$ ), $2.53(1 \mathrm{H}, \mathrm{dd}, J 13.6$ and 8.3 , $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}$ ), 2.49-2.39 (1H, m, CH(CH3 $\left.)_{2}\right), 0.99(3 \mathrm{H}, \mathrm{d}, J 6.4$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.65\left(3 \mathrm{H}, \mathrm{d}, J 6.8, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ 173.9 ( $\mathrm{NC}=\mathrm{O}$ ), 153.0 ( $\mathrm{OC}=0$ ), 137.8 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), 134.8 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), $129.4,{ }^{2} 129.3,{ }^{2} 128.8,{ }^{2} 128.5,^{2} 127.4^{1}$ and $127.2^{1}(10 \times \mathrm{CH}$; $2 \times \mathrm{Ph}), 65.6\left(\mathrm{CH}_{2} \mathrm{O}\right), 56.4(\mathrm{BnCHN}), 54.8(\mathrm{PhCHi} \mathrm{-Pr}), 37.1\left(\mathrm{PhCH}_{2}\right)$, $31.7\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$, $21.7\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $20.1\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}, 355.2018 ; \mathrm{C}_{21} \mathrm{H}_{27} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$355.2016).
4.22. Synthesis of 4-isopropyl-3-[2-phenyl-3-methylbutanoyl]-oxazolidin-2-one (rac)-anti-36 and 4-isopropyl-3-[2-phenyl-3-methylbutanoyl]oxazolidin-2-one (rac)-syn-36

In the same way as the oxazolidin-2-one (rac)-20, n-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-isopropyl-oxazoli-din-2-one ( rac )-13 $(0.17 \mathrm{~g}, 1.36 \mathrm{mmol})$ and pentafluorophenyl 2-phenyl-3-methylbutanoate ( rac )-17 ( $0.51 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazolidin-2-ones syn- and anti-36 (ratio 68:32:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give an inseparable mixture of oxazolidin-2-ones (rac)-anti- and (rac)-syn- $\mathbf{3 6}$ ( $0.13 \mathrm{~g}, 33 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.82 .

Oxazolidin-2-one (rac)-anti-36; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60{ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.82 ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1770$ $(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.43-7.21(5 \mathrm{H}$, $\mathrm{m}, 5 \times \mathrm{CH}$; Ph), 4.77 (1H, d, J 10.5, PhCHi-Pr), 4.49 ( $1 \mathrm{H}, \mathrm{m}, i-\mathrm{PrCHN}$ ), $4.23\left(1 \mathrm{H}, \mathrm{t}, J 8.7, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.10\left(1 \mathrm{H}, \mathrm{dd}, J 8.7\right.$ and $\left.3.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$, 2.53-2.41 (1H, m, CH(CH3 $)_{2}$; PhCHi-Pr), 2.16-2.07 ( $1 \mathrm{H}, \mathrm{m}$, $\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}$; oxazolidin-2-one), $1.05,0.76,0.71$ and $0.25(4 \times 3 \mathrm{H}, \mathrm{d}$, $\left.J \sim 6.9,2 \times \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 174.2(\mathrm{NC}=\mathrm{O}), 153.3$ $(\mathrm{OC}=\mathrm{O}), 138.3(\mathrm{i}-\mathrm{C} ; \mathrm{Ph}), 129.3^{2}, 128.6^{2}$ and $127.3^{1}(5 \times \mathrm{CH}$; Ph), $62.6\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.8(i-\mathrm{PrCHN}), 55.9$ ( $\mathrm{PhCHi} \mathrm{-Pr}$ ), $32.7\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right.$; oxaz-olidin-2-one), $28.3\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right.$; PhCHi-Pr), 21.4, 20.2, 18.2 and 14.6 (4C, $4 \times \mathrm{CH}_{3} ; 2 \times \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}$ ) (Found $\mathrm{MH}^{+}, 290.1751 ; \mathrm{C}_{17} \mathrm{H}_{24} \mathrm{NO}_{3}{ }^{+}$ requires $\mathrm{MH}^{+}$290.1751; and found $\mathrm{MNH}_{4}{ }^{+}$, 307.2015; $\mathrm{C}_{17} \mathrm{H}_{27} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 307.2016$ ).

Oxazolidin-2-one (rac)-syn-36; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60{ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.82 ; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1772$ $(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.43-7.22(5 \mathrm{H}$, $\mathrm{m}, 5 \times \mathrm{CH}$; Ph ), 4.81 ( $1 \mathrm{H}, \mathrm{d}, J 10.5$, PhCHi-Pr), 4.37 ( $1 \mathrm{H}, \mathrm{m}, i-\mathrm{PrCHN}$ ), 4.15-4.08 ( $2 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{2} \mathrm{O}$ ), 2.53-2.43 ( $\left.2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.05$, $0.92,0.88$ and $0.71\left(4 \times 3 \mathrm{H}, \mathrm{d}, J 6.9,2 \times \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$; $\delta_{\mathrm{C}}(100 \mathrm{MHz}$, $\left.\mathrm{CDCl}_{3}\right) 174.2(\mathrm{NC}=\mathrm{O}), 153.2(\mathrm{OC}=0), 138.3$ (i-C; Ph), 129.42, $128.5^{2}$ and $127.3^{1}\left(5 \times \mathrm{CH}\right.$; Ph ), $62.8\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.8$ (i-PrCHN), 55.4 ( $\mathrm{PhCHi}-\mathrm{Pr}$ ), $32.7\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right.$; oxazolidin-2-one), $28.4\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right.$; PhCHi-Pr), 21.4, 20.2, 18.2 and $14.6\left(4 \mathrm{C}, 4 \times \mathrm{CH}_{3} ; 2 \times \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$ (Found $\mathrm{MH}^{+}, 290.1751 ; \mathrm{C}_{17} \mathrm{H}_{24} \mathrm{NO}_{3}{ }^{+}$requires $\mathrm{MH}^{+}$290.1751; and found $\mathrm{MNH}_{4}{ }^{+}, 307.2015 ; \mathrm{C}_{17} \mathrm{H}_{27} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$307.2016).
4.23. Synthesis of 4-phenyl-3-[2-phenyl-3-methylbutanoyl]-oxazolidin-2-one (rac)-anti-43 and 4-phenyl-3-[2-phenyl-3-methylbutanoyl]oxazolidin-2-one (rac)-syn-43

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-phenyl-oxazoli-din-2-one ( rac )-8 ( $0.22 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-phenyl-3-methylbutanoate ( rac )-17 ( $0.51 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazolidin-2-ones syn- and anti-43 (ratio: 87:13 syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum $\left(40-60^{\circ} \mathrm{C}\right) /$ diethyl ether (7:3) to give an inseparable mixture of oxazolidin-2-ones (rac)-anti- and (rac)-syn-43 ( $0.11 \mathrm{~g}, 25 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.64 .

Oxazolidin-2-one (rac)-anti-43; $R_{\mathrm{F}}$ [light petroleum (bp 40$60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.64; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.37-7.04(10 \mathrm{H}, \mathrm{m}$, $10 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 5.27(1 \mathrm{H}, \mathrm{dd}, J 8.8$ and 3.2, PhCHN$), 4.71(1 \mathrm{H}, \mathrm{d}$, J 10.7, PhCHi-Pr), 4.48 ( $1 \mathrm{H}, \mathrm{t}, J 8.8, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), 4.14 ( $1 \mathrm{H}, \mathrm{dd}, J 8.8$ and 3.2, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 2.33-2.23\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 0.74(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.55\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right)$ 174.0 ( $\mathrm{NC}=\mathrm{O}$ ), 153.3 ( $\mathrm{OC}=\mathrm{O}$ ), 139.6 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), 137.3 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), $129.3^{2}, 128.9^{1}, 128.6^{1}, 128.3^{2} 127.3^{2}$ and $125.8^{2}(10 \times \mathrm{CH}$; $2 \times \mathrm{Ph}), 69.4\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.1(\mathrm{PhCHN}), 55.9(\mathrm{PhCHi}-\mathrm{Pr}), 32.8$ $\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 21.3\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $20.2\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}, 341.1864 ; \mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 341.1860$ ).

Oxazolidin-2-one ( $R, S$ )-syn-43 (derived from a stereospecific synthesis); $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.61; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.20-7.01(8 \mathrm{H}, \mathrm{m}, 8 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 6.73(2 \mathrm{H}$, d, $J 7.3,2 \times \mathrm{CH} ; \mathrm{Ph}$ ), $5.40(1 \mathrm{H}, \mathrm{dd}, J 8.7$ and $3.6, \mathrm{PhCHN}), 4.66$ (1H, d, J 10.7, PhCHi-Pr), 4.56 (1H, t, J 8.8, CH $\mathrm{H}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), 3.97 (1H, dd, $J 8.8$ and $\left.3.6, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 2.36-2.23\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 0.97(3 \mathrm{H}, \mathrm{d}$, $J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}$ ) and 0.58 (3H, d, J 6.9, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$; $\delta_{\mathrm{C}}(100 \mathrm{MHz}$, $\left.\mathrm{CDCl}_{3}\right) 174.0(\mathrm{NC}=\mathrm{O}), 153.2(\mathrm{OC}=0)$, 139.7 (i-C; Ph), 137.8 (i-C; $\mathrm{Ph}), 129.2,{ }^{2} 128.9,{ }^{1} 128.6,{ }^{1} 128.3,{ }^{2} 127.4^{2}$ and $125.9^{2}(10 \times \mathrm{CH}$; $2 \times \mathrm{Ph}), 69.5\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.2(\mathrm{PhCHN}), 55.5(\mathrm{PhCHi}-\mathrm{Pr}), 32.8$ $\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 21.3\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $20.2\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 341.1864; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$341.1860).
4.24. Synthesis of ethyl 2-oxa-3-[2-phenyl-3-methylbutanoyl]-oxazolidin-4-carboxylate (rac)-anti-48 and ethyl 2-oxa-3-[2-phenyl-3-methylbutanoyl]oxazolidin-4-carboxylate (rac)-syn48

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), ethyl oxazolidin-2-one 4-carboxylate (rac)-14 ( $0.21 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-phenyl-3-methylbutanoate ( rac )-17 ( $0.51 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazolidin-2-ones syn- and anti-48 (ratio: 57:43 syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti-48 $(0.11 \mathrm{~g}, 25 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.55; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1791(\mathrm{OC}=0), 1751(\mathrm{CC}=0)$ and $1700(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.43-7.30(5 \mathrm{H}, \mathrm{m}$, $5 \times \mathrm{CH} ; \mathrm{Ph}), 4.71\left(1 \mathrm{H}, \mathrm{dd}, J 9.1\right.$ and $\left.3.7, \mathrm{EtO}_{2} \mathrm{CCHN}\right), 4.70(1 \mathrm{H}, \mathrm{d}, J$ 10.4, PhCHi-Pr), 4.34 ( $1 \mathrm{H}, \mathrm{t}, J 9.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), $4.26\left(3 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{\mathrm{A}} \mathrm{CH}_{\mathrm{B}} \mathrm{O}\right.$ and $\left.\mathrm{OCH}_{2} \mathrm{CH}_{3}\right), 2.45-2.35\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.24(3 \mathrm{H}, \mathrm{t}, J 9.1$, $\left.\mathrm{OCH}_{2} \mathrm{CH}_{3}\right), 1.02\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.64(3 \mathrm{H}, \mathrm{d}, J 6.9$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 174.1(\mathrm{NC}=\mathrm{O}), 168.5(\mathrm{EtOC}=\mathrm{O})$, 152.3 ( $\mathrm{OC}=\mathrm{O}$ ), 137.7 ( $\mathrm{i}-\mathrm{C} ; \mathrm{Ph}$ ), $129.2^{2}, 128.5^{2}$ and $127.4^{1}(5 \times \mathrm{CH}$; $\mathrm{Ph}), 63.9\left(\mathrm{CH}_{2} \mathrm{O}\right), 62.5\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.8\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 55.7(\mathrm{PhCHi}-\mathrm{Pr})$, $32.9\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 21.3\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right), 20.2\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and 13.6 $\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 337.1759; $\mathrm{C}_{17} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 337.1758$ ); and the oxazolidin-2-one ( rac )-syn- 48 ( 0.16 g , $37 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60{ }^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.42 ; $\mathrm{mp} 60-63{ }^{\circ} \mathrm{C}$; $v_{\max }\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1791(\mathrm{OC}=\mathrm{O})$, $1755(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz}, \mathrm{CDCl}_{3}$ ) $7.35-7.15(5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH}$; Ph), 4.87 ( 1 H , dd, $J$ 9.1 and $3.8, \mathrm{EtO}_{2} \mathrm{CCHN}$ ), 4.61 ( $\left.1 \mathrm{H}, \mathrm{d}, \mathrm{J} 10.5, \mathrm{PhCHi}-\mathrm{Pr}\right), 4.45(1 \mathrm{H}, \mathrm{t}$, $\left.J 9.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.16\left(1 \mathrm{H}\right.$, dd, J 9.1 and 3.8, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$, 3.99-3.89 $\left(1 \mathrm{H}, \mathrm{m}, \mathrm{OCH}_{2} \mathrm{CH}_{3}\right), 2.43-2.37\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 0.98(3 \mathrm{H}, \mathrm{t}, \mathrm{J} 6.8$, $\left.\mathrm{OCH}_{2} \mathrm{CH}_{3}\right), 0.91\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.64(3 \mathrm{H}, \mathrm{d}, J 6.9$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 173.9(\mathrm{NC}=\mathrm{O}), 168.5(\mathrm{EtOC}=\mathrm{O})$, $153.0(\mathrm{OC}=\mathrm{O}), 137.5(i-\mathrm{C} ; \mathrm{Ph}), 129.3,{ }^{2} 128.6^{2}$ and $127.7^{1}(5 \times \mathrm{CH}$; $\mathrm{Ph}), 63.7\left(\mathrm{CH}_{2} \mathrm{O}\right), 62.5\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.9\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 55.3(\mathrm{PhCHi}-\mathrm{Pr})$, $32.6\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 21.2\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $20.3\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $13.9\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}, 337.1755 ; \mathrm{C}_{17} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$337.1758).

### 4.25. Synthesis of 4-methyl-5-phenyl-3-[2-(4-methylphenyl)-propanoyl]oxazolidin-2-one (rac)-anti,syn-23 and 4-methyl-5-phenyl-3-[2-(4-methylphenyl)propanoyl]oxazolidin-2-one (rac)-syn,syn-23

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-methyl-5-phenyl-oxazolidin-2-one ( $4 R S, 5 S R$ )-( rac )-11 ( $0.24 \mathrm{~g}, 1.36 \mathrm{mmol})$ and pentafluorophenyl 2-(4-methylphenyl)propanoate (rac)-18 ( $0.49 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazolidin-2-ones syn,syn- and anti, syn-23 (ratio 70:30 syn,syn-:anti,syn-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxaz-olidin-2-one (rac)-anti,syn-23 ( $83 \mathrm{mg}, 19 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.71; $\delta_{\mathrm{H}}$ ( $400 \mathrm{MHz}, \mathrm{CDCl}_{3}$ ) $7.35-7.28(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH} ; \mathrm{Ph}), 7.21-7.19(2 \mathrm{H}$, $\mathrm{m}, 2 \times \mathrm{CH} ; \mathrm{Ph}), 7.20(2 \mathrm{H}, \mathrm{dt}, J 7.9$ and $2.1,2 \times \mathrm{CH} ; \mathrm{Ar}), 7.08(2 \mathrm{H}$, $\mathrm{dt}, J 7.9$ and $2.1,2 \times \mathrm{CH}$; Ar), $5.46(1 \mathrm{H}, \mathrm{d}, J 6.9$, OCHPh; oxazoli-din-2-one), $5.04\left(1 \mathrm{H}, \mathrm{q}, J 7.1, \mathrm{ArCHCH}_{3}\right), 4.60\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{3} \mathrm{CHN}\right)$, $2.29\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} ; \mathrm{Ar}\right), 1.46\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.1, \mathrm{ArCHCH}_{3}\right)$ and $0.89(3 \mathrm{H}, \mathrm{d}$, $J$ 6.9, $\mathrm{CHCH}_{3} ;$ oxazolidin-2-one); $\delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 174.8$ $(\mathrm{NC}=\mathrm{O}), 152.9$ ( $\mathrm{OC}=\mathrm{O}$ ), 137.7 (i-C; Ar), 137.1 (i-C, Ar), 133.9 (i-C; $\mathrm{Ph}), 129.7^{2}$ and $128.3^{2}\left(4 \times \mathrm{CH}\right.$; Ar), $128.6^{3}$ and $125.5^{2}(5 \times \mathrm{CH}$; $\mathrm{Ph}), 79.1(\mathrm{PhCHO}), 55.0\left(\mathrm{CH}_{3} \mathrm{CHN}\right), 43.6\left(\mathrm{ArCHCH}_{3}\right), 21.4\left(\mathrm{CH}_{3}\right.$; $\mathrm{Ar}), 19.8\left(\mathrm{ArCHCH}_{3}\right)$ and $14.5\left(\mathrm{CH}_{3} \mathrm{CHN}\right.$; oxazolidin-2-one) (Found
$\mathrm{MNH}_{4}{ }^{+}$341.1862; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$, 341.1860); and the oxazolidin-2-one (rac)-syn,syn- $23(0.18 \mathrm{~g}, 41 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.47 ; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.31-7.23(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH}$; Ph), 7.18$7.23(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $2.1,2 \times \mathrm{CH}$; Ar), $7.18(2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH}$; Ph $)$, $7.13-7.11(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $2.0,2 \times \mathrm{CH}$; Ar), $5.57(1 \mathrm{H}, \mathrm{d}, J 7.1, \mathrm{OCH}-$ Ph ; oxazolidin-2-one), 4.96 ( $1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}$ ), 4.75 ( $1 \mathrm{H}, \mathrm{m}$, $\mathrm{CH}_{3} \mathrm{CHN}$ ), $2.25\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} ; \mathrm{Ar}\right), 1.42$ (3H, d, J 6.9, $\mathrm{ArCHCH}_{3}$ ) and 0.89 (3H, d, J 7.1, $\mathrm{CH}_{3} \mathrm{CHN}$; oxazolidin-2-one); $\delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right)$ 174.7 ( $\mathrm{NC}=\mathrm{O}$ ), 152.8 ( $\mathrm{OC}=0$ ), 137.6 (i-C; Ar), 137.2 (i-C, Ar), 133.8 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), $129.6^{2}$ and $128.2^{2}(4 \times \mathrm{CH} ; \mathrm{Ar}), 129.1^{3}$ and $126.2^{2}$ $(5 \times \mathrm{CH} ; \mathrm{Ph}), 79.2(\mathrm{PhCHO}), 55.1\left(\mathrm{CH}_{3} \mathrm{CHN}\right), 43.4\left(\mathrm{ArCHCH}_{3}\right), 21.2$ $\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right), 19.9\left(\mathrm{ArCHCH}_{3}\right)$ and $14.3\left(\mathrm{CH}_{3} \mathrm{CHN}\right.$; oxazolidin-2-one) (Found $\mathrm{MNH}_{4}{ }^{+} \quad 341.1858 ; \quad \mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$, 341.1860).
4.26. Synthesis of 4-benzyl-3-[2-(4-methylphenyl)propanoyl]-oxazolidin-2-one (rac)-anti-30 and 4-benzyl-3-[2-(4-methyl-phenyl)propanoyl]oxazolidin-2-one (rac)-syn-30

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-benzyl-oxazoli-din-2-one (rac)-12 ( $0.24 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-(4-methylphenyl)propanoate ( rac )-17 ( $0.49 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazolidin-2-ones syn- and anti-30 (ratio: 69:31 syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti- $\mathbf{3 0}$ ( $83 \mathrm{mg}, 19 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.50 ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=\mathrm{O})$ and 1700 $(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.27-7.13(7 \mathrm{H}, \mathrm{m}, 7 \times \mathrm{CH} ; \mathrm{Ar}$ and $\mathrm{Ph}), 7.04(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar), $5.00(1 \mathrm{H}, \mathrm{q}, J 7.0$, $\mathrm{ArCHCH}_{3}$ ), 4.54-4.45 (1H, m, BnCHN), 4.02 ( $1 \mathrm{H}, \mathrm{dd}, J 9.0$ and 2.2 , $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.96\left(1 \mathrm{H}, \mathrm{t}, J 9.0, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{O}\right), 3.27(1 \mathrm{H}, \mathrm{dd}, J 13.1$ and 3.1 , $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right), 2.71\left(1 \mathrm{H}\right.$, dd, J 13.1 and $\left.9.6, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{Ph}\right), 2.23(3 \mathrm{H}, \mathrm{s}$, $\left.\mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and $1.45\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.0, \mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ $174.7(\mathrm{NC}=\mathrm{O}), 152.8(\mathrm{OC}=\mathrm{O}), 137.0(i-\mathrm{C} ; \mathrm{Ar}), 136.8\left(i-\mathrm{CCH}_{3} ; \mathrm{Ar}\right)$, 135.3 (i-C; Ph), $129.3^{2}, 128.9^{2}$ and $127.3^{1}\left(5 \times \mathrm{CH}\right.$; Ph), $129.2^{2}$ and $127.9^{2}\left(4 \times \mathrm{CH}\right.$; Ar), $65.8\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.7(\mathrm{BnCHN}), 42.6$ $\left(\mathrm{ArCHCH}_{3}\right), 37.8\left(\mathrm{CH}_{2} \mathrm{Ph}\right), 21.1\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and $19.4\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+} \quad 341.1860 ; \quad \mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$, 341.1860 ); and the oxazolidin-2-one (rac)-syn- $\mathbf{3 0}$ ( $0.185 \mathrm{~g}, 42 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.29; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=\mathrm{O})$ and 1700 ( $\mathrm{NC}=0$ ) ; mp $94-96^{\circ} \mathrm{C} ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.23$ ( $2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar), $7.13-7.09(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH}$; Ph$), 7.07(2 \mathrm{H}, \mathrm{dt}$, $J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar), 6.89-6.87 ( $2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH}$; Ph), 4.99 $\left(1 \mathrm{H}, \mathrm{q}, J 7.0, \mathrm{ArCHCH}_{3}\right), 4.68-4.62(1 \mathrm{H}, \mathrm{m}, \mathrm{BnCHN}), 4.08(1 \mathrm{H}, \mathrm{t}, J$ 8.6, $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), 3.97 ( 1 H , dd, $J 8.6$ and 3.1, $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), $3.01(1 \mathrm{H}, \mathrm{dd}, J$ 13.1 and $\left.3.5, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right), 2.49\left(1 \mathrm{H}\right.$, dd, $J 13.1$ and $\left.8.8, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{Ph}\right)$, $2.26\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and $1.41\left(3 \mathrm{H}, \mathrm{d}, J 7.0, \mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}$ $\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.5(\mathrm{NC}=\mathrm{O}), 152.8(\mathrm{OC}=0), 137.0(i-\mathrm{C} ; \mathrm{Ar})$, $136.8\left(i-\mathrm{CCH}_{3} ; \mathrm{Ar}\right), 134.9(i-\mathrm{C} ; \mathrm{Ph}), 129.4,{ }^{2} 128.4^{2}$ and $127.1^{1}$ $\left(5 \times \mathrm{CH}\right.$; Ph), $129.3^{2}$ and $128.0^{2}(4 \times \mathrm{CH}$; Ar$)$, $65.6\left(\mathrm{CH}_{2} \mathrm{O}\right), 54.8$ ( BnCHN ), $42.7\left(\mathrm{ArCHCH}_{3}\right), 37.2\left(\mathrm{CH}_{2} \mathrm{Ph}\right), 21.0\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and 19.0 ( $\mathrm{ArCHCH}_{3}$ ) (Found $\mathrm{MNH}_{4}^{+}$341.1863; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}, 341.1860$ ).

### 4.27. Synthesis of 4-isopropyl-3-[2-(4-methylphenyl)propa-noyl]oxazolidin-2-one (rac)-anti-37 and 4-isopropyl-3-[2 -(4-methylphenyl)propanoyl]oxazolidin-2-one (rac)-syn-37

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-isopropyl-oxazoli-din-2-one ( rac )-13 ( $0.17 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-(4-methylphenyl)propanoate ( rac )-18 ( $0.49 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave
the oxazolidin-2-ones syn- and anti-37 (ratio 96:4 syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one ( rac )-anti- $37(11 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ (light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.63; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and 1700 $(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.16(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $2.1,2 \times \mathrm{CH}$; $\mathrm{Ar}), 7.04(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $2.1,2 \times \mathrm{CH}$; Ar$), 5.15(1 \mathrm{H}, \mathrm{q}, J 7.0$, $\left.\mathrm{ArCHCH}_{3}\right), 4.29-4.25(1 \mathrm{H}, \mathrm{m}, i-\mathrm{PrCHN}), 4.09-4.01\left(2 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{2} \mathrm{O}\right)$, 2.41-2.31 ( $\left.1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 2.24$ (3H, s, $\left.\mathrm{CH}_{3} ; \mathrm{Ar}\right), 1.42$ ( $3 \mathrm{H}, \mathrm{d}, J$ 7.0, $\mathrm{ArCHCH}_{3}$ ), $1.13\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.84(3 \mathrm{H}, \mathrm{d}, J$ 6.9, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \quad \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.7(\mathrm{NC}=\mathrm{O}), 153.3$ $(\mathrm{OC}=\mathrm{O}), 137.2(i-\mathrm{C} ; \mathrm{Ar}), 136.8\left(i-\mathrm{CCH}_{3} ; \mathrm{Ar}\right), 129.2^{2}$ and $127.9^{2}$ $\left(4 \times \mathrm{CH}\right.$; Ar), $63.0\left(\mathrm{CH}_{2} \mathrm{O}\right), 59.0(i-\mathrm{PrCHN}), 42.6\left(\mathrm{ArCHCH}_{3}\right), 28.4$ $\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 21.9\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right), 19.1\left(\mathrm{ArCHCH}_{3}\right), 18.0\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $14.6\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}$293.1857; $\mathrm{C}_{16} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}, 293.1860$ ); and the oxazolidin-2-one (rac)-syn-37 ( 0.21 g , $57 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] 0.50; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=0)$; $\mathrm{mp} 62-64^{\circ} \mathrm{C}$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.17(2 \mathrm{H}, \mathrm{dt}, J$ 8.1 and $2.1,2 \times \mathrm{CH}$; Ar), $7.01(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $2.1,2 \times \mathrm{CH}$; Ar), $5.00\left(1 \mathrm{H}, \mathrm{q}, J 6.8, \mathrm{ArCHCH}_{3}\right), 4.42-4.38(1 \mathrm{H}, \mathrm{m}, i-\mathrm{PrCHN}), 4.14$ ( $1 \mathrm{H}, \mathrm{t}, J 9.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), 4.01 ( 1 H , dd, $J 9.1$ and $3.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), 2.21 ( $3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} ; \mathrm{Ar}$ ), 2.15-2.05 (1H, m, CH(CH $\left.)_{2}\right), 1.36(3 \mathrm{H}, \mathrm{d}, J 6.8$, $\left.\mathrm{ArCHCH}_{3}\right), 0.71\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.39(3 \mathrm{H}, \mathrm{d}, J 6.9$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.5(\mathrm{NC}=\mathrm{O}), 153.3(\mathrm{OC}=\mathrm{O})$, 137.3 (i-C; Ar), $136.5\left(i-\mathrm{CCH}_{3} ; \mathrm{Ar}\right), 129.0^{2}$ and $127.7^{2}(4 \times \mathrm{CH}$; Ar), $62.9\left(\mathrm{CH}_{2} \mathrm{O}\right), 57.9(i-\mathrm{PrCHN}), 42.7\left(\mathrm{ArCHCH}_{3}\right), 27.7\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$, $20.9\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right), 18.6\left(\mathrm{ArCHCH}_{3}\right), 18.0\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and 14.6 $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}$293.1858; $\mathrm{C}_{16} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$, 293.1860).
4.28. Synthesis of 4-phenyl-3-[2-(4-methylphenyl)propanoyl] oxazolidin-2-one (rac)-anti,syn-44 and 4-phenyl-3-[2-(4-meth ylphenyl)propanoyl]oxazolidin-2-one (rac)-syn,syn-44

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-phenyl-oxazoli-din-2-one ( rac )-8 $(0.22 \mathrm{~g}, 1.36 \mathrm{mmol})$ and pentafluorophenyl 2-(4-methylphenyl)propanoate ( rac )-18 ( $0.49 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazolidin-2-ones syn- and anti-44 (ratio 95:5 syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti-44 (13 mg, 3\%) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.47; mp $124-127^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=0)$ and $1705(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.35-7.23(5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH}$; $\mathrm{Ph}), 7.17(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $2.1,2 \times \mathrm{CH}$; Ar), $6.95(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $2.1,2 \times \mathrm{CH}$; Ar), $5.25(1 \mathrm{H}, \mathrm{dd}, J 8.6$ and $3.1, \mathrm{PhCHN}), 5.01(1 \mathrm{H}, \mathrm{q}, J$ 7.1, $\left.\mathrm{ArCHCH}_{3}\right), 4.48\left(1 \mathrm{H}, \mathrm{t}, J 8.6, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.14(1 \mathrm{H}, \mathrm{dd}, J 8.6$ and 3.1, $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), $2.25\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and 1.32 (3H, d, J 7.1, $\mathrm{ArCHCH}_{3}$ ); $\delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 173.7(\mathrm{NC}=\mathrm{O}), 155.0(\mathrm{OC}=\mathrm{O}), 138.2(i-\mathrm{C} ; \mathrm{Ar})$, $136.8\left(i-\mathrm{CCH}_{3} ; \mathrm{Ar}\right), 136.6(i-\mathrm{C} ; \mathrm{Ph}), 129.2^{2}$ and $127.9^{2}(4 \times \mathrm{CH}$; $\mathrm{Ar}), 128.7^{2}, 128.4^{1}$, and $125.8^{2}(5 \times \mathrm{CH}$; Ph $)$, $69.4\left(\mathrm{CH}_{2} \mathrm{O}\right), 57.7$ ( PhCHN ), $43.3\left(\mathrm{ArCHCH}_{3}\right), 21.0\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and $18.6\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+} \quad 327.1710 ; \mathrm{C}_{19} \mathrm{H}_{23} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$, 327.1700 ); and the oxazolidin-2-one (rac)-syn-44 ( $0.25 \mathrm{~g}, 59 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.29; mp 120-123 ${ }^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.21-7.12(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH}$; $\mathrm{Ph}), 6.96(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar), $6.90(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar), $6.86(2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH}$; Ph $), 5.36(1 \mathrm{H}, \mathrm{dd}, J 9.1$ and 5.1, PhCHN ), $5.01\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}\right), 4.54\left(1 \mathrm{H}, \mathrm{t}, J 9.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$, $3.99\left(1 \mathrm{H}, \mathrm{dd}, J 9.1\right.$ and $\left.5.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 2.24\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and 1.32 (3H, d, J 6.9, $\mathrm{ArCHCH}_{3}$ ); $\delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 173.5(\mathrm{NC}=\mathrm{O}), 154.9$ $(\mathrm{OC}=0), 138.4\left(i-\mathrm{CCH}_{3} ; \mathrm{Ar}\right), 136.8$ (i-C; Ar), 136.4 (i-C; Ph), $129.1^{2}$
and $127.6^{2}\left(4 \times \mathrm{CH}\right.$; Ar), $128.6^{2}, 128.4^{1}$ and $125.7^{2}(5 \times \mathrm{CH}$; Ph $)$, $69.6\left(\mathrm{CH}_{2} \mathrm{O}\right), 57.8(\mathrm{PhCHN}), 43.2\left(\mathrm{ArCHCH}_{3}\right), 21.0\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and $18.7\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+} 327.1700 ; \mathrm{C}_{19} \mathrm{H}_{23} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}, 327.1700$ ).

### 4.29. Synthesis of ethyl 2-oxa-3-[2-(4-methylphenyl)propan-oyl]oxazolidin-4-carboxylate (rac)-anti-49 and ethyl 2-oxa-3-[2-(4-methylphenyl)propanoyl]oxazolidin-4-carboxylate (rac)-syn-49

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-14 ( $0.21 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-(4-methylphenyl)propanoate ( rac )-18 ( $0.49 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave the oxazoli-din-2-ones syn- and anti-49 (ratio 95:5 syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti-49 ( $12 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.40 ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1794(\mathrm{OC}=0), 1747(\mathrm{CC}=\mathrm{O})$ and 1700 $(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.18(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $2.1,2 \times \mathrm{CH}$; Ar), $7.06(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $2.1,2 \times \mathrm{CH}$; Ar$), 5.01(1 \mathrm{H}, \mathrm{q}, J 7.0$, $\mathrm{ArCHCH}_{3}$ ), 4.70 ( $1 \mathrm{H}, \mathrm{dd}, J 9.1$ and $3.5, \mathrm{EtO}_{2} \mathrm{CCHN}$ ), $4.34(1 \mathrm{H}, \mathrm{t}, J$ 9.1, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.26-4.17\left(3 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right.$ and $\left.\mathrm{OCH}_{2} \mathrm{CH}_{3}\right), 2.26(3 \mathrm{H}$, $\left.\mathrm{s}, \mathrm{CH}_{3} ; \mathrm{Ar}\right), 1.42\left(3 \mathrm{H}, \mathrm{d}, J 7.0, \mathrm{ArCHCH}_{3}\right)$ and $1.24(3 \mathrm{H}, \mathrm{t}, J 7.2$, $\left.\mathrm{OCH}_{2} \mathrm{CH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.5(\mathrm{NC}=\mathrm{O}), 168.5(\mathrm{CC}=\mathrm{O})$, $151.0(\mathrm{OC}=\mathrm{O}), 137.0(i-\mathrm{C} ; \mathrm{Ar}), 136.8\left(i-\mathrm{CCH}_{3} ; \mathrm{Ar}\right), 129.3^{2}$ and $128.0^{2}(2 \times \mathrm{CH} ; \mathrm{Ar}), 65.8 \quad\left(\mathrm{CH}_{2} \mathrm{O}\right.$; oxazolidin-2-one $), 62.6$ $\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right), 55.8\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 42.4\left(\mathrm{ArCHCH}_{3}\right), 21.0\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right)$, $19.1\left(\mathrm{ArCHCH}_{3}\right)$ and $14.0\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+} 323.1596$; $\mathrm{C}_{16} \mathrm{H}_{23} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}, 323.1601$ ); and the oxazolidin-2one (rac)-syn-49 ( $0.25 \mathrm{~g}, 60 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.20; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1794(\mathrm{OC}=\mathrm{O}), 1746(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.16(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar$), 7.03$ ( $2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar), $4.90\left(1 \mathrm{H}, \mathrm{q}, J 7.0, \mathrm{ArCHCH}_{3}\right)$, $4.84\left(1 \mathrm{H}, \mathrm{dd}, J 9.5\right.$ and $\left.4.7, \mathrm{EtO}_{2} \mathrm{CCHN}\right), 4.41\left(1 \mathrm{H}, \mathrm{t}, J 9.5, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$, $4.13\left(1 \mathrm{H}, \mathrm{dd}, J 9.5\right.$ and $\left.4.7, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.05\left(2 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$, 2.23 (3H, CH ${ }_{3}$; Ar), 1.38 (3H, d, J 7.0, $\mathrm{ArCHCH}_{3}$ ) and 1.06 (3H, t, J $\left.7.2, \mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{O}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.1(\mathrm{NC}=\mathrm{O}), 167.9(\mathrm{CC}=\mathrm{O})$, $151.7(\mathrm{OC}=\mathrm{O})$, $136.6\left(i-\mathrm{CCH}_{3} ; \mathrm{Ar}\right), 136.6(i-\mathrm{C} ; \mathrm{Ar}), 129.0^{2}$ and $127.9^{2}$ ( $2 \times \mathrm{CH}$; Ar), $64.0\left(\mathrm{CH}_{2} \mathrm{O}\right.$; oxazolidin-2-one), $62.1\left(\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{O}\right)$, 55.5 $\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 42.6\left(\mathrm{ArCHCH}_{3}\right), 20.9\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right), 19.1\left(\mathrm{ArCHCH}_{3}\right)$ and $13.6\left(\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{O}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}$323.1607; $\mathrm{C}_{16} \mathrm{H}_{23} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$, 323.1601).
4.30. Synthesis of 3-[2-(4-isobutylphenyl)propanoyl]-4-methyl-5-phenyl-oxazolidin-2-one (rac)-anti,syn-24 and 3-[2-(4-isobu-tylphenyl)propanoyl]-4-methyl-5-phenyl-oxazolidin-2-one (rac)-syn,syn-24

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, \quad 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-( $4 R S, 5 S R)-\mathbf{1 1}(0.24 \mathrm{~g}, \quad 1.36 \mathrm{mmol})$ and pentafluorophenyl 2-(4-isobutylphenyl)propanoate (rac)-7 ( $0.55 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones 24 (ratio: 75:25 syn,syn-:anti,syn-). The crude residue was purified by flash column chromatography on silica gel eluting with light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxaz-olidin-2-one (rac)-anti,syn-24 (93 mg, 19\%) as a colourless oil; $R_{F}$ [light petroleum ether ( $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.77; $v_{\max }$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1776(\mathrm{OC}=\mathrm{O})$ and $1692(\mathrm{NC}=0) ; \delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 7.42-7.24(7 \mathrm{H}, \mathrm{m}, 7 \times \mathrm{CH}$; Ph and Ar ), $7.10(2 \mathrm{H}$, br d, J 8.2, $2 \times \mathrm{CH}$; Ar), 5.48 ( $1 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.2, \mathrm{PhCHO}$ ), 5.12 ( $1 \mathrm{H}, \mathrm{q}, J 7.0, \mathrm{ArCHCH}_{3}$ ), $4.67\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{3} \mathrm{CHN}\right), 2.44\left(2 \mathrm{H}, \mathrm{d}, J 7.2, \mathrm{CH}_{2} \mathrm{Ar}\right), 1.90-1.80(1 \mathrm{H}, \mathrm{m}$, $\left.\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.47\left(3 \mathrm{H}, \mathrm{d}, J 7.0, \mathrm{ArCHCH}_{3}\right), 0.91\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}\right.$;
$\mathrm{CH}_{3} \mathrm{CHN}$ ) and $0.89\left(6 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9,\left(\mathrm{CH}_{3}\right)_{2} \mathrm{CH}\right)$; $\delta_{\mathrm{C}}\left(100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ 174.7 ( $\mathrm{NC}=\mathrm{O}$ ), 152.6 ( $\mathrm{OC}=\mathrm{O}$ ), 140.7 ( $i-\mathrm{C} ; \mathrm{Ar}$ ), 137.7 ( $i-\mathrm{C} ; \mathrm{Ar}$ ), 133.3 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), $129.4^{2}$ and $127.8^{2}\left(4 \times \mathrm{CH}\right.$; Ar), $128.7^{3}$ and $125.6^{2}$ ( $5 \times \mathrm{CH}$; Ph), 78.7 ( PhCHO ), 55.4 ( $i$ - PrCHN ), $45.1\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 42.9$ $\left(\mathrm{ArCHCH}_{3}\right), 30.2\left(\mathrm{CH}_{2} \mathrm{Ar}\right), 22.5\left(2 \times \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}} ; i-\mathrm{BuC}_{6} \mathrm{H}_{4}-\right), 19.3$ $\left(\mathrm{ArCHCH}_{3}\right)$ and $14.5\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$ (Found M ${ }^{+}$, 365.1988; $\mathrm{C}_{23} \mathrm{H}_{27} \mathrm{NO}_{3}$ requires $\mathrm{M}^{+}$, 365.1985); and the oxazolidin-2-one (rac)-syn,syn$24(0.26 \mathrm{~g}, 52 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.55 ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1770$ $(\mathrm{OC}=\mathrm{O})$ and $1699(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.38-7.16(7 \mathrm{H}$, $\mathrm{m}, 7 \times \mathrm{CH}$; Ph and Ar ), $7.08(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar), 5.63 (1H, d, J 7.4, PhCHO), $5.05\left(1 \mathrm{H}, \mathrm{q}, J 7.1, \mathrm{ArCHCH}_{3}\right), 4.81(1 \mathrm{H}$, $\mathrm{m}, i-\mathrm{PrCHN}), 2.43\left(2 \mathrm{H}, \mathrm{d}, J 7.2, \mathrm{CH}_{2} \mathrm{Ar}\right), 1.89-1.79(1 \mathrm{H}, \mathrm{m}$, $\left.\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$ ), $1.48\left(3 \mathrm{H}, \mathrm{d}, J 7.1, \mathrm{ArCHCH}_{3}\right), 0.88(3 \mathrm{H}, \mathrm{d}, J 6.7$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right), 0.87\left(3 \mathrm{H}, \mathrm{d}, J 6.7, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.72(3 \mathrm{H}, \mathrm{d}, J 6.7$, $\mathrm{CH}_{3} \mathrm{CHN}$ ); $\delta_{\mathrm{C}}\left(100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.6$ ( $\mathrm{NC}=\mathrm{O}$ ), 152.6 ( $\mathrm{OC}=\mathrm{O}$ ), 140.5 (i-C; Ar), 137.5 (i-C; Ar), 133.6 (i-C; Ph), $129.3^{2}$ and $127.7^{2}$ ( $4 \times \mathrm{CH}$; Ar ), $128.8 .{ }^{1} 128.7^{2}$ and $125.8^{2}(5 \times \mathrm{CH}$; Ph), $78.8(\mathrm{PhCHO})$, $54.7\left(\mathrm{CH}_{3} \mathrm{CHN}\right), 45.1\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 42.2\left(\mathrm{ArCHCH}_{3}\right), 30.1\left(\mathrm{ArCH}_{2}\right)$, $22.5^{2}\left(2 \mathrm{C} ; \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}} ; i-\mathrm{BuC}_{6} \mathrm{H}_{4}-\right), 19.4\left(\mathrm{ArCHCH}_{3}\right)$ and 14.2 $\left(\mathrm{CH}_{3} \mathrm{CHN}\right.$ ) (Found $\mathrm{M}^{+}, 365.1986 ; \mathrm{C}_{23} \mathrm{H}_{27} \mathrm{NO}_{3}$ requires $\mathrm{M}^{+}$, 365.1985).

### 4.31. Synthesis of 4-benzyl-3-[2-(4-isobutylphenyl)propanoyl]-oxazolidin-2-one (rac)-anti-31 and 4-benzyl-3-[2-(4-isobutyl-phenyl)propanoyl]oxazolidin-2-one (rac)-syn-31

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.60 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-12 $(0.24 \mathrm{~g}, \quad 1.36 \mathrm{mmol})$ and pentafluorophenyl 2-(4-isobutylphenyl)propanoate ( rac )-7 ( $0.55 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones 31 (ratio: 79:21 syn-:anti-). The crude residue was purified by flash column chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti-31 ( $78 \mathrm{mg}, 15 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.68 ; mp 79$80^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=\mathrm{O})$ and $1696(\mathrm{NC}=0) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.36-7.18$ ( $7 \mathrm{H}, \mathrm{m}, 7 \times \mathrm{CH}$; Ar and Ph ), 7.08 ( $2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar), $5.11\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}\right)$, 4.62-4.54 (1H, m, BnCHN), 4.12-4.00 ( $2 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{2} \mathrm{O}$ ), $3.34(1 \mathrm{H}$, dd, $J 13.2$ and $3.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}$ ), 2.79 ( $1 \mathrm{H}, \mathrm{dd}, J 13.2$ and $9.8, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}$ ), $2.43\left(2 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.2, \mathrm{ArCH}_{2}\right), 1.89-1.79\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.54(3 \mathrm{H}, \mathrm{d}, \mathrm{J}$ 6.9, $\mathrm{ArCHCH}_{3}$ ) and $1.54\left(6 \mathrm{H}, \mathrm{d}, J \sim 6.7,2 \times \mathrm{CH}_{3}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right) ; \delta_{\mathrm{C}}$ ( $100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 174.9 ( $\mathrm{NC}=\mathrm{O}$ ), 153.0 ( $\mathrm{OC}=\mathrm{O}$ ), 140.7 (i-C; Ar), 137.5 (i-C; Ar), 135.4 (i-C; Ph), 129.5, ${ }^{2} 129.0^{2}$ and $127.4^{1}(5 \times \mathrm{CH}$; $\mathrm{Ph}), 129.3^{2}$ and $127.9^{2}\left(4 \times \mathrm{CH}\right.$; Ar); $65.9\left(\mathrm{CH}_{2} \mathrm{O}\right)$, $55.9(\mathrm{BnCHN})$, $45.1\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 42.7\left(\mathrm{ArCHCH}_{3}\right), 38.0\left(\mathrm{PhCH}_{2}\right), 30.2\left(\mathrm{ArCH}_{2}\right), 22.4$ (2C; $\left.\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$ and $19.5\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}, 366.2061$; $\mathrm{C}_{23} \mathrm{H}_{28} \mathrm{NO}_{3}$ requires $\mathrm{MH}^{+}, 366.2164$ ); and the oxazolidin-2-one (rac)-syn-31 ( $0.30 \mathrm{~g}, 60 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.37 ; mp 93$95{ }^{\circ} \mathrm{C} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1768(\mathrm{OC}=0)$ and $1698(\mathrm{NC}=0) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.23(2 \mathrm{H}$, br d, $J 8.2,2 \times \mathrm{CH}$; Ar ), $7.24-6.93$ ( $7 \mathrm{H}, \mathrm{m}, 7 \times \mathrm{CH}$; Ph and Ar ), $5.10\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}\right), 4.79-$ $4.70(1 \mathrm{H}, \mathrm{m}, \mathrm{BnCHN}), 4.17\left(1 \mathrm{H}, \mathrm{t}, J 8.9, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.06(1 \mathrm{H}, \mathrm{dd}, J$ 8.9 and $3.2, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{O}$ ), $3.06\left(1 \mathrm{H}\right.$, dd, $J 13.4$ and $\left.3.2 \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right)$, 2.59 ( 1 H , dd, $J 13.4$ and 8.7, $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}$ ), 2.46 ( $2 \mathrm{H}, \mathrm{d}, J 7.2, \mathrm{ArCH}_{2}$ ), 1.91$1.82\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.51\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9, \mathrm{ArCHCH}_{3}\right), 0.91(3 \mathrm{H}, \mathrm{d} \mathrm{J}$ 6.7, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.90\left(3 \mathrm{H}, \mathrm{d}, J 6.7, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; ~ \delta_{\mathrm{C}}$ ( $100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 174.7 ( $\mathrm{NC}=\mathrm{O}$ ), 153.0 ( $\mathrm{OC}=\mathrm{O}$ ), 140.7 (i-C; Ar), 137.4 (i-C; Ar), $135.0(i-\mathrm{C} ; \mathrm{Ph}), 129.5,{ }^{2} 128.0^{2}$ and $127.2^{1}(5 \times \mathrm{CH}$; $\mathrm{Ph}), 129.4^{2}$ and $127.9^{2}\left(4 \times \mathrm{CH}\right.$; Ar), $65.7\left(\mathrm{CH}_{2} \mathrm{O}\right)$, $54.9(\mathrm{BnCHN})$, $45.1\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 42.8\left(\mathrm{ArCHCH}_{3}\right), 37.4\left(\mathrm{PhCH}_{2}\right), 30.2\left(\mathrm{ArCH}_{2}\right), 22.5$ $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right), 22.4\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $19.2\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}$ $366.2065 ; \mathrm{C}_{23} \mathrm{H}_{28} \mathrm{NO}_{3}$ requires $\mathrm{MH}^{+}, 366.2064$ ).
4.32. Synthesis of 3-[2-(4-isobutylphenyl)propanoyl]-4-isopro-pyloxazolidin-2-one (rac)-anti-38 and 3-[2-(4-isobutylphenyl)-propanoyl]-4-isopropyl-oxazolidin-2-one (rac)-syn-38

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.60 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-13 ( $0.17 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-(4-isobutylphenyl)propanoate (rac)-7 ( $0.55 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones $\mathbf{3 8}$ (ratio: 96:4 syn-:anti-). The crude residue was purified by flash column chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti- $\mathbf{3 8}$ ( $16 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.77; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1776$ $(\mathrm{OC}=\mathrm{O})$ and $1692(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.23(2 \mathrm{H}, \mathrm{br} \mathrm{d}, J$ $8.2,2 \times \mathrm{CH}$; Ar), $7.07(2 \mathrm{H}, \mathrm{br}$ d, J 8.2, $2 \times \mathrm{CH}$; Ar), $5.11(1 \mathrm{H}, \mathrm{q}, J 7.2$, $\mathrm{ArCHCH}_{3}$ ), 4.37-4.32 (1H, m, $\left.i-\mathrm{PrCHN}\right), 4.15-4.07\left(2 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{2} \mathrm{O}\right)$, 2.46-2.39 (2H, m, CH $\left.{ }_{2} \mathrm{Ar}\right), 1.87-1.77\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.49(3 \mathrm{H}$, d, J 7.2, $\mathrm{ArCHCH}_{3}$ ), $0.91\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3} ; \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 0.90(3 \mathrm{H}, \mathrm{d}, J$ $\left.6.9, \mathrm{CH}_{3} ; \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$ and $0.88\left(6 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9,2 \times \mathrm{CH}_{3} ; \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right) ; \delta_{\mathrm{C}}$ ( $100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 174.9 ( $\mathrm{NC}=\mathrm{O}$ ), 153.6 ( $\mathrm{OC}=\mathrm{O}$ ), 140.6 ( $i-\mathrm{C} ; \mathrm{Ar)}$, 137.5 (i-C; Ar), $129.3^{2}$ and $127.8^{2}(4 \times \mathrm{CH} ; \mathrm{Ar}), 63.1\left(\mathrm{CH}_{2} \mathrm{O}\right), 59.0$ ( $i$-PrCHN), $45.1\left(\mathrm{CH}_{\left.\left(\mathrm{CH}_{3}\right)_{2}\right), 42.6\left(\mathrm{ArCHCH}_{3}\right), 30.2\left(\mathrm{CH}_{2} \mathrm{Ar}\right), 28.6}\right.$ $\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 22.7\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}} ; i-\mathrm{BuC}_{6} \mathrm{H}_{4}-\right), 22.4\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right.$; $i-$ $\left.\mathrm{BuC}_{6} \mathrm{H}_{4}-\right)$, $19.7\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right.$; oxazolidin-2-one), $18.0\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right.$; oxazolidin-2-one) and $14.7\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}, 318.20062$; $\mathrm{C}_{19} \mathrm{H}_{28} \mathrm{NO}_{3}$ requires $\mathrm{MH}^{+}, 318.2064$ ); and the oxazolidin-2-one (rac)-syn- $\mathbf{3 8}$ ( $0.24 \mathrm{~g}, 56 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1) 0.55; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ $1778(\mathrm{OC}=0)$ and $1699(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.23(2 \mathrm{H}, \mathrm{br}$ d, $J 8.2,2 \times \mathrm{CH}$; Ar), $7.03(2 \mathrm{H}, \mathrm{br}$ d, $J 8.2,2 \times \mathrm{CH}$; Ar), $5.11(1 \mathrm{H}, \mathrm{q}, J$ $\left.6.9, \mathrm{ArCHCH}_{3}\right), 4.50-4.44(1 \mathrm{H}, \mathrm{m}, i-\mathrm{PrCHN}), 4.21\left(1 \mathrm{H}, \mathrm{t}, J 8.6, \mathrm{CH}_{\mathrm{A}} \mathrm{H}-\right.$ $\left.{ }_{\mathrm{B}} \mathrm{O}\right), 4.07\left(1 \mathrm{H}, \mathrm{dd}, J 8.6\right.$ and $\left.3.5, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{O}\right), 2.40\left(2 \mathrm{H}, \mathrm{d}, J 7.2, \mathrm{CH}_{2} \mathrm{Ar}\right)$, 2.19-2.07 (1H, m, CH(CH3 $)_{2}$; oxazolidin-2-one), 1.87-1.75 (1H, m, $\left.\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2} ; \mathrm{ArCHCH}_{3}\right), 1.44\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9, \mathrm{ArCHCH}_{3}\right), 0.85(6 \mathrm{H}, \mathrm{d}, J$ $\left.\sim 6.7,2 \times \mathrm{CH}_{3} ; \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 0.76\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and 0.38 (3H, d, J 6.9, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.8(\mathrm{NC}=\mathrm{O})$, 153.5 ( $\mathrm{OC}=0$ ), 140.6 ( $i-\mathrm{C} ; \mathrm{Ar}$ ), 137.6 ( $i-\mathrm{C} ; \mathrm{Ar)}$,129.3 and 127.8 $\left(2 \times \mathrm{CH}\right.$; Ar), $62.8\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.0(i-\mathrm{PrCHN}), 45.0\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 42.9$ $\left(\mathrm{ArCHCH}_{3}\right), 30.2\left(\mathrm{CH}_{2} \mathrm{Ar}\right)$, $27.8\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right.$; oxazolidin-2-one), 22.7 $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}} ; \quad i-\mathrm{BuC}_{6} \mathrm{H}_{4}-\right), \quad 22.3\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}} ; \quad i-\mathrm{BuC}_{6} \mathrm{H}_{4}-\right), \quad 18.5$ $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right.$; oxazolidin-2-one), $17.7\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right.$; oxazolidin-2one) and $14.0\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{M}^{+}, 317.1979 ; \mathrm{C}_{29} \mathrm{H}_{27} \mathrm{NO}_{3}$ requires $\mathrm{M}^{+}$, 317.1985).
4.33. Synthesis of 3-[2-(4-isobutylphenyl)propanoyl]-4-phenyl-oxazolidin-2-one (rac)-anti-10 and 3-[2-(4-isobutylphenyl)-propanoyl]-4-phenyl-oxazolidin-2-one (rac)-syn-10

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-8 $(0.22 \mathrm{~g}, \quad 1.36 \mathrm{mmol})$ and pentafluorophenyl 2 -(4-isobutylphenyl)propanoate ( rac ) $-7(0.55 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones $\mathbf{1 0}$ (ratio: 96:4 syn-:anti-). The crude residue was purified by flash column chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether, ( $7: 3$ ) to give the oxazolidin-2-one (rac)-anti-10 (14 mg, 3\%) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.62 ; $v_{\text {max }}$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1701(\mathrm{NC}=\mathrm{O}) ; \mathrm{mp} 150-154^{\circ} \mathrm{C}$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.39-7.23(7 \mathrm{H}, \mathrm{m}, 7 \times \mathrm{CH} ; \mathrm{Ar}$ and Ph$), 7.07$ $(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar), $5.33(1 \mathrm{H}, \mathrm{dd}, J 8.4$ and 3.2 , PhCHN $), 5.10\left(1 \mathrm{H}, \mathrm{q}, J 7.1, \mathrm{ArCHCH}_{3}\right), 4.55\left(1 \mathrm{H}, \mathrm{t}, J 8.9, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$, $4.20\left(1 \mathrm{H}\right.$, dd $J 8.9$ and $\left.3.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 2.42\left(2 \mathrm{H}, \mathrm{d}, J 7.2, \mathrm{ArCH}_{2}\right)$, 1.88-1.78 (1H, m, CH(CH3 $\left.)_{2}\right), 1.39\left(3 \mathrm{H}, \mathrm{d}, J 7.1, \mathrm{ArCHCH}_{3}\right), 0.89$ $\left(3 \mathrm{H}, \mathrm{d}, J 6.7, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.88\left(3 \mathrm{H}, \mathrm{d}, J 6.7, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}$
( $100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 173.9 ( $\mathrm{NC}=\mathrm{O}$ ), 153.2 ( $\mathrm{OC}=\mathrm{O}$ ), 140.6 (i-C; Ar), 138.3 ( $i-\mathrm{C} ; \mathrm{Ar}$ ), $137.0(i-\mathrm{C} ; \mathrm{Ph}), 129.3^{2}$ and $128.0^{2}(4 \times \mathrm{CH} ; \mathrm{Ar})$, $128.8{ }^{2} 128.5^{1}$ and $125.8^{2}\left(5 \times \mathrm{CH}\right.$; Ph), $69.6\left(\mathrm{CH}_{2} \mathrm{O}\right), 57.8(\mathrm{PhCHN})$, $45.1\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 43.3\left(\mathrm{ArCHCH}_{3}\right), 30.2\left(\mathrm{ArCH}_{2}\right), 22.4\left(2 \mathrm{C}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$ and $18.5\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}, 352.1913 ; \mathrm{C}_{22} \mathrm{H}_{26} \mathrm{NO}_{3}$ requires $\mathrm{MH}^{+}, 352.1907$ ); and the oxazolidin-2-one (rac)-syn-10 ( 0.29 g , $60 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60{ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.41 ; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1779$ $(\mathrm{OC}=\mathrm{O})$ and $1705(\mathrm{NC}=0) ; \mathrm{mp} 67-71^{\circ} \mathrm{C} ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ 7.28-7.15 ( $3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH}$; Ph and/or Ar), 7.03-7.00 ( $4 \mathrm{H}, \mathrm{m}$, $4 \times \mathrm{CH}$; Ph and Ar ), $6.90(2 \mathrm{H}, \mathrm{dt}, J 7.9$ and $2.1,2 \times \mathrm{CH}$; Ar), 5.44 ( 1 H , dd $J 9.2$ and $5.2, \mathrm{PhCHN}$ ), $5.09\left(1 \mathrm{H}, \mathrm{q}, J 6.9 ; \mathrm{ArCHCH}_{3}\right), 4.63$ $\left(1 \mathrm{H}, \mathrm{t}, J 9.0, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.06\left(1 \mathrm{H}, \mathrm{dd}, J 9.0\right.$ and $\left.5.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 2.43$ (2H, d, J 7.4, $\mathrm{ArCH}_{2}$ ), 1.89-1.79 (1H, m, CH(CH3 $\left.)_{2}\right), 1.38(3 \mathrm{H}, \mathrm{d}, J$ 6.9, $\mathrm{ArCHCH}_{3}$ ), 0.91 (3H, d, $J 6.7, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}$ ) and 0.91 ( $3 \mathrm{H}, \mathrm{d}, J$ 6.7, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.3(\mathrm{NC}=\mathrm{O}), 153.3$ ( $\mathrm{OC}=0$ ), 140.7 (i-C; Ar), 139.4 (i-C; Ar), 137.4 (i-C; Ph), 129.3² and $127.0^{2}(4 \times \mathrm{CH}$; Ar$), 129.2,{ }^{2} 128.7^{1}$ and $125.8^{2}(5 \times \mathrm{CH}$; Ph $)$, $69.7\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.1(\mathrm{PhCHN}), 45.1\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 42.7\left(\mathrm{ArCHCH}_{3}\right), 30.2$ $\left(\mathrm{ArCH}_{2}\right), 22.4\left(2 \mathrm{C}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$ and $19.4\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}$, 352.1909; $\mathrm{C}_{22} \mathrm{H}_{26} \mathrm{NO}_{3}$ requires $\mathrm{MH}^{+}, 352.1907$ ).
4.34. Synthesis of ethyl 3-[2-(4-isobutylphenyl)propanoyl] oxa-zolidin-2-one 4-carboxylate (rac)-anti-50 and ethyl 3-[2-(4-isobutylphenyl)propanoyl] oxazolidin-2-one 4-carboxylate (rac)-syn-50

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-14 ( $0.21 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-(4-isobutylphenyl)propanoate (rac)-7 ( $0.55 \mathrm{~g}, 1.36 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones $\mathbf{5 0}$ (ratio: 94:6 syn-:anti-). The crude residue was purified by flash column chromatography on silica gel eluting with light petroleum ether (bp $40-60{ }^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti-50 ( $19 \mathrm{mg}, 4 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.53; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1791$ $(\mathrm{OC}=\mathrm{O}), 1751(\mathrm{CC}=0)$ and $1701(\mathrm{NC}=0) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ $7.23(2 \mathrm{H}, \mathrm{dt}, J 8.0$ and $2.1,2 \times \mathrm{CH}$; Ar), $7.10(2 \mathrm{H}, \mathrm{dt}, J 8.0$ and 2.1 , $2 \times \mathrm{CH} ; \mathrm{Ar}), 5.09\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}\right), 4.78(1 \mathrm{H}, \mathrm{dd}, J 9.4$ and 3.7, $\left.\mathrm{EtO}_{2} \mathrm{CCHN}\right), 4.41\left(1 \mathrm{H}, \mathrm{t}, J \mathrm{~J} 9.0 \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.33-4.23(3 \mathrm{H}, \mathrm{m}$, $3 \times \mathrm{CH}, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ and $\left.\mathrm{CH}_{2} \mathrm{CH}_{3}\right), 2.42\left(2 \mathrm{H}, \mathrm{d}, J 7.2, \mathrm{ArCH}_{2}\right), 1.87-$ $1.77\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.49\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{ArCHCH}_{3}\right), 1.30(3 \mathrm{H}, \mathrm{t}, J$ 7.2, $\mathrm{CH}_{2} \mathrm{CH}_{3}$ ) and $0.88\left(6 \mathrm{H}, \mathrm{d}, \mathrm{J} \sim 6.7, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$; $\delta_{\mathrm{C}}(100.6 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 174.7(\mathrm{NC}=\mathrm{O}), 168.6(\mathrm{CC}=0)$, $152.0(\mathrm{OC}=0), 140.8$ ( $i-\mathrm{C}$; $\mathrm{Ar}), 137.1$ (i-C; Ar), $129.4^{2}$ and $127.9^{2}(4 \times \mathrm{CH}$; Ar$), 64.2\left(\mathrm{CH}_{2} \mathrm{O}\right)$, $62.5\left(\mathrm{CH}_{2} \mathrm{O}\right.$; ester), $55.9\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 45.1\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 42.5$ $\left(\mathrm{ArCHCH}_{3}\right), 30.2\left(\mathrm{ArCH}_{2}\right), 22.4\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 19.2\left(\mathrm{ArCHCH}_{3}\right)$ and $14.0\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MNH}_{4}^{+}, 365.2069 ; \mathrm{C}_{19} \mathrm{H}_{29} \mathrm{~N}_{2} \mathrm{O}_{5}$ requires $\mathrm{MNH}_{4}{ }^{+}, 365.2171$ ); and the oxazolidin-2-one (rac)-syn-50 $(0.275 \mathrm{~g}, 58 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60{ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.35 ; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1791$ $(\mathrm{OC}=\mathrm{O}), 1747(\mathrm{CC}=\mathrm{O})$ and $1699(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ $7.23(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $2.1,2 \times \mathrm{CH}$; Ar$), 7.10(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and 2.1 , $2 \times \mathrm{CH} ; \mathrm{Ar}), 5.01\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}\right), 4.93(1 \mathrm{H}, \mathrm{dd}, J 9.4$ and 4.7, $\mathrm{EtO}_{2} \mathrm{CCHN}$ ), $4.51\left(1 \mathrm{H}, \mathrm{t}, J 9.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.24(1 \mathrm{H}, \mathrm{dd}, J 9.4$ and 4.7, $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.10\left(2 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{CH}_{2} \mathrm{CH}_{3}\right), 2.42(2 \mathrm{H}, \mathrm{d}, J 7.2$, $\left.\mathrm{ArCH}_{2}\right), 1.87-1.77\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.46\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9, \mathrm{ArCHCH}_{3}\right)$, $1.10\left(3 \mathrm{H}, \mathrm{t}, \mathrm{J} 7.2, \mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ and $0.88\left(6 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.7,2 \times \mathrm{CH}_{3} ; \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$; $\delta_{\mathrm{C}}\left(100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.5(\mathrm{NC}=0)$, 168.0 ( $\mathrm{OC}=\mathrm{O}$ ), 152.0 ( $i-\mathrm{C}$; $\mathrm{Ar}), 140.5$ (i-C; Ar), $136.9(i-\mathrm{C} ; \mathrm{Ph}), 129.2^{2}$ and $127.9^{2}(4 \times \mathrm{CH}$; $\mathrm{Ar}), 64.2\left(\mathrm{CH}_{2} \mathrm{O}\right), 62.3\left(\mathrm{CH}_{2} \mathrm{O}\right.$; ester), $55.7\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 45.1$ $\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 42.7\left(\mathrm{ArCHCH}_{3}\right), 30.1\left(\mathrm{ArCH}_{2}\right), 22.4\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 19.3$ $\left(\mathrm{ArCHCH}_{3}\right)$ and $13.8 \quad\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}, 365.2073$; $\mathrm{C}_{19} \mathrm{H}_{29} \mathrm{~N}_{2} \mathrm{O}_{5}$ requires $\mathrm{MNH}_{4}{ }^{+}, 365.2071$ ).
4.35. Synthesis of 4-methyl-5-phenyl 3-[(4-chlorophenyl)-propanoyl]-oxazolidin-2-one (rac)-(2RS,4RS,5SR)-anti,syn25 and 3-[(4-chlorophenyl)propanoyl]-4-methyl-5-phenyl-oxazolidin-2-one (rac)-(2SR,4RS,5SR)-syn,syn-25

In the same way as the oxazolidin-2-one (rac)-20, $n$ - BuLi ( $0.6 \mathrm{~mL}, \quad 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( $4 R S, 5 S R$ )-( rac )- $\mathbf{1 1}$ ( $0.24 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-(4-chlorophenyl)propanoate ( rac ) - $\mathbf{1 9}$ ( $0.53 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones 25 (ratio: 70:30 syn,syn-:anti,syn-). The crude residue was purified by flash column chromatography on a silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxaz-olidin-2-one (rac)-anti,syn-25 ( $88 \mathrm{mg}, 19 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ )] $0.58 ; \mathrm{mp} 89-91^{\circ} \mathrm{C} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and 1702 $(\mathrm{CC}=0) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.36-7.28(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH} ; \mathrm{Ph})$, 7.25-7.23 ( $4 \mathrm{H}, \mathrm{ABq}, J 3.4,4 \times \mathrm{CH}$; Ar), $7.22-7.19(2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH}$; $\mathrm{Ph}), 5.42(1 \mathrm{H}, \mathrm{d}, J 7.1, \mathrm{OCHPh}), 5.04\left(1 \mathrm{H}, \mathrm{q}, J 7.0, \mathrm{ArCHCH}_{3}\right) 4.60$ ( $1 \mathrm{H}, \mathrm{m}$ (appears as a quintet, $J 6.6$ ), $\mathrm{CH}_{3} \mathrm{CHN}$ ), 1.42 ( $3 \mathrm{H}, \mathrm{d}, J 7.0$, $\left.\mathrm{ArCHCH}_{3}\right)$ and $0.86\left(3 \mathrm{H}, \mathrm{d}, J 6.6, \mathrm{CH}_{3} \mathrm{CHN}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right)$ 173.9 ( $\mathrm{NC}=\mathrm{O}$ ), 152.5 ( $\mathrm{OC}=\mathrm{O}$ ), 138.8 (i-CC; Ar), 133.1 ( $i-\mathrm{CCl} ; \mathrm{Ar)}$, 133.0 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), $129.5^{2}$ and $128.8^{2}\left(4 \times \mathrm{CH}\right.$; Ar), $128.8,{ }^{1} 128.7^{2}$ and $125.6^{2}\left(5 \times \mathrm{CH}\right.$; Ph), 78.7 (OCHPh), $55.4\left(\mathrm{CH}_{3} \mathrm{CHN}\right), 42.7$ $\left(\mathrm{ArCHCH}_{3}\right), \quad 19.2 \quad\left(\mathrm{ArCHCH}_{3}\right)$ and $14.5 \quad\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 361.1307. $\mathrm{C}_{19} \mathrm{H}_{22} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 361.1313 ); and the oxazolidin-2-one (rac)-syn,syn-25 ( 0.205 g , $44 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] 0.23; $\mathrm{mp} 65-67{ }^{\circ} \mathrm{C} v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1779$ $(\mathrm{OC}=\mathrm{O})$ and $1699(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.32-7.27(3 \mathrm{H}$, $\mathrm{m}, 3 \times \mathrm{CH}$; Ph), $7.24-7.21(4 \mathrm{H}, \mathrm{ABq}, J 1.3,4 \times \mathrm{CH}, \mathrm{Ar}), 7.15-7.11$ $(2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH}, \mathrm{Ph}), 5.60(1 \mathrm{H}, \mathrm{d}, J 7.3, \mathrm{OCHPh}) 4.97(1 \mathrm{H}, \mathrm{q}, J 7.0$, $\left.\mathrm{ArCHCH}_{3}\right), 4.66\left(1 \mathrm{H}, \mathrm{dq}, J 7.3\right.$ and $\left.6.6, \mathrm{CH}_{3} \mathrm{CHN}\right), 1.41(3 \mathrm{H}, \mathrm{d}, J 7.0$, $\left.\mathrm{ArCHCH}_{3}\right)$ and $0.91\left(3 \mathrm{H}, \mathrm{d}, J 6.6, \mathrm{CH}_{3} \mathrm{CHN}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right)$ 173.8 ( $\mathrm{NC}=\mathrm{O}$ ), 152.4 ( $\mathrm{C}=\mathrm{O}$ ), 138.6 ( $i-\mathrm{CC} ; \mathrm{Ar}$ ), 133.2 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), 132.9 ( $i-\mathrm{CCl}$; Ar ), $129.4^{2}$ and $128.7^{2}\left(2 \times \mathrm{CH}\right.$; Ar ), $128.8,{ }^{1} 128.6^{2}$ and $125.6^{2}(5 \times \mathrm{CH}$; Ph $)$, 78.8 (OCHPh), $54.7\left(\mathrm{CH}_{3} \mathrm{CHN}\right), 43.0$ $\left(\mathrm{ArCHCH}_{3}\right), 19.3\left(\mathrm{ArCHCH}_{3}\right)$ and $14.1 \quad\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$ (Found $\left.\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)\right)^{+}$, 361.1311. $\mathrm{C}_{19} \mathrm{H}_{22} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 361.1313).
4.36. Synthesis of 4-benzyl-3-[(4-chlorophenyl)propanoyl]-oxa-zolidin-2-one (rac)-anti-32 and 4-benzyl-3-[(4-chlorophenyl)-propanoyl]-oxazolidin-2-one (rac)-syn-32

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-12 ( $0.24 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-(4-chlorophenyl)propanoate (rac)-19 ( $0.53 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones 32 (ratio: 69:31 syn-:anti-). The crude residue was purified by flash column chromatography on a silica gel eluting with light petroleum ether (bp 40$60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti32 ( $88 \mathrm{mg}, 19 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ )] 0.61; mp 70-73 ${ }^{\circ} \mathrm{C} ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1781(\mathrm{OC}=\mathrm{O})$ and $1698(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.35-$ $7.25(7 \mathrm{H}, \mathrm{m}, 7 \times \mathrm{CH} ; 2 \times \mathrm{Ph}), 7.20(2 \mathrm{H}, \mathrm{dd}, J 8.2$ and $1.5,2 \times \mathrm{CH}$; $\mathrm{Ph}), 5.07\left(1 \mathrm{H}, \mathrm{q}, \mathrm{J} 7.0, \mathrm{ArCHCH}_{3}\right), 4.64-4.56(1 \mathrm{H}, \mathrm{m}, \mathrm{BnCHN}), 4.11$ $\left(1 \mathrm{H}\right.$, dd ( ABq ), $J 8.7$ and $\left.2.6, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.07\left(1 \mathrm{H}, \mathrm{t}, J 8.7, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$, $3.32\left(1 \mathrm{H}, \mathrm{dd}, J 13.2\right.$ and $\left.3.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right), 2.78(1 \mathrm{H}, \mathrm{dd}, J 13.2$ and $9.5, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}$ ) and $1.50\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.0, \mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right)$ 174.2 ( $\mathrm{NC}=\mathrm{O}$ ), 152.8 ( $\mathrm{OC}=0$ ), 138.6 (i-CC; Ar), 135.2 (i-C; Ph), 133.1 (i-CCl; Ar), $129.5^{2}$ and $128.9^{2}\left(2 \times \mathrm{CH}\right.$; Ar ), $129.4,{ }^{2} 128.7^{2}$ and $127.4^{1}(5 \times \mathrm{CH}$; Ph$)$, $65.9\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.7(\mathrm{BnCHN}), 42.5$ $\left(\mathrm{ArCHCH}_{3}\right), 37.8\left(\mathrm{PhCH}_{2}\right)$ and $19.4\left(\mathrm{ArCHCH}_{3}\right)\left(\right.$ Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 361.1315. $\mathrm{C}_{19} \mathrm{H}_{22} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\left.\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}, 361.1313\right)$; and the
oxazolidin-2-one (rac)-syn-32 ( $0.196 \mathrm{~g}, 42 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3)] 0.43; $v_{\text {max }}$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and $1708(\mathrm{NC}=0) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right)$ $7.37(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.2,2 \times \mathrm{CH}$; Ar), $7.32(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and 2.2 , $2 \times \mathrm{CH} ; \mathrm{Ar}), 7.23-7.20(3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH} ; \mathrm{Ph}), 6.98(2 \mathrm{H}, \mathrm{dd}, J 6.2$ and $2.1,2 \times \mathrm{CH} ; \mathrm{Ph}), 5.08\left(1 \mathrm{H}, \mathrm{q}, J 7.0, \mathrm{ArCHCH}_{3}\right), 4.75-3.99(1 \mathrm{H}$, $\mathrm{m}, \mathrm{BnCHN}), 4.20\left(1 \mathrm{H}, \mathrm{t}, J 8.9, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.09(1 \mathrm{H}, \mathrm{dd}, J 8.9$ and $\left.3.2, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{O}\right), 3.08\left(1 \mathrm{H}, \mathrm{dd}, J 13.6\right.$ and $\left.3.5, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right), 2.58(1 \mathrm{H}$, dd, $J 13.6$ and $\left.9.0, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{Ph}\right)$ and $1.50\left(3 \mathrm{H}, \mathrm{d}, J 7.0, \mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}$ ( $100 \mathrm{MHz}, \mathrm{CDCl}_{3}$ ) $174.0(\mathrm{NC}=\mathrm{O}), 152.8$ ( $\mathrm{OC}=\mathrm{O}$ ), 138.6 (i-CC; Ar ), 134.7 (i-C; Ph), 133.1 ( $i-\mathrm{CCl} ; \mathrm{Ar}$ ), $129.6^{2}$ and $128.8^{2}(2 \times \mathrm{CH}$; Ar), $129.3{ }^{2} 128.7^{2}$ and $127.5^{1}(5 \times \mathrm{CH}$; Ph $), 65.9\left(\mathrm{CH}_{2} \mathrm{O}\right), 54.9(\mathrm{BnCHN})$, $42.5\left(\mathrm{ArCHCH}_{3}\right), 37.3\left(\mathrm{PhCH}_{2}\right)$ and $19.0\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 361.1310. $\mathrm{C}_{19} \mathrm{H}_{22} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 361.1313).

### 4.37. Synthesis of 4-isopropyl-3-[(4-chlorophenyl)propanoyl]-oxazolidin-2-one (rac)-anti-39 and 4-isopropyl-3-[(4-chloro-phenyl)propanoyl]-oxazolidin-2-one (rac)-syn-39

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-13 ( $0.17 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-(4-chlorophenyl)propanoate (rac)-19 ( $0.53 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones (rac)-13 (ratio: 74:26 syn-:anti-). The crude residue was purified by flash column chromatography on a silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxazolidin-2-one (rac)-anti-39 ( $68 \mathrm{mg}, 17 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.56 ; $\mathrm{mp} 62-64{ }^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=0)$ and $1702(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 7.26(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar), $7.15(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $2.1,2 \times \mathrm{CH}$; Ar ), $5.00\left(1 \mathrm{H}, \mathrm{q}, \mathrm{J} 7.1, \mathrm{ArCHCH}_{3}\right), 4.27-4.24(1 \mathrm{H}$, $\mathrm{m}, i-\mathrm{PrCHN}), 4.00-3.96\left(2 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{2} \mathrm{O}\right), 2.40-2.30(1 \mathrm{H}, \mathrm{m}$, $\left.\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.31\left(3 \mathrm{H}, \mathrm{d}, J 7.0, \mathrm{ArCHCH}_{3}\right), 1.15(3 \mathrm{H}, \mathrm{d}, J 6.9$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.90\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ $174.0(\mathrm{NC}=0), 153.4$ ( $\mathrm{OC}=0$ ), 138.9 (i-CC; Ar), 132.9 (i-CCl; Ar), $129.4^{2}$ and $128.8^{2}(4 \times \mathrm{CH}$; Ar$), 62.9\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.1$ ( $i$-PrCHN), 42.6 $\left(\mathrm{ArCHCH}_{3}\right), 27.9\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 18.6\left(\mathrm{ArCHCH}_{3}\right), 17.7\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $14.1 \quad\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$313.1310; $\mathrm{C}_{15} \mathrm{H}_{22} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 313.1313 ); the oxazolidin-2one (rac)-syn-39 ( $0.185 \mathrm{~g}, 46 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $\left.40-60^{\circ} \mathrm{C}\right) /$ diethyl ether (1:1)] 0.32; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ 7.25-7.18 (4H, m; $4 \times \mathrm{CH} ; \mathrm{Ar}), 5.00\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}\right), 4.43-$ $4.38(1 \mathrm{H}, \mathrm{m}, i-\mathrm{PrCHN}), 4.18\left(1 \mathrm{H}, \mathrm{t}, J 9.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.05(1 \mathrm{H}, \mathrm{dd}, J$ 9.1 and $3.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ), 2.16-2.06 (1H, m, $\left.\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.37(3 \mathrm{H}, \mathrm{d}, \mathrm{J}$ 6.9, $\left.\mathrm{ArCHCH}_{3}\right), 0.73\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.43(3 \mathrm{H}, \mathrm{d}, J$ $\left.6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \quad \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.1 \quad(\mathrm{NC}=\mathrm{O}), 153.4$ ( $\mathrm{OC}=0$ ), 138.7 (i-C; Ar ), 132.7 (i-CCl; Ar), $129.3^{2}$ and $128.7^{2}$ $(4 \times \mathrm{CH}$; Ar$), 62.6\left(\mathrm{CH}_{2} \mathrm{O}\right), 57.9(i-\mathrm{PrCHN}), 42.5\left(\mathrm{ArCHCH}_{3}\right), 27.7$ $\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), \quad 18.6 \quad\left(\mathrm{ArCHCH}_{3}\right), \quad 17.9 \quad\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and 14.3 $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+} 313.1311 ; \mathrm{C}_{15} \mathrm{H}_{22} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 313.1313).

### 4.38. Synthesis of 4-phenyl-3-[(4-chlorophenyl)propanoyl]-oxa-zolidin-2-one (rac)-anti-45 and 4-phenyl-3-[(4-chlorophenyl)-propanoyl]-oxazolidin-2-one (rac)-syn-45

In the same way as the oxazolidin-2-one (rac)-20, $n-\operatorname{BuLi}(0.6 \mathrm{~mL}$, 2.5 M in hexane, 1.50 mmol ), oxazolidin-2-one ( rac ) $\mathbf{- 8}$ ( 0.22 g , 1.36 mmol ) and pentafluorophenyl 2-(4-chlorophenyl)propanoate (rac)-19 ( $0.53 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones 45 (ratio: 95:5 syn-:anti-). The crude residue was purified by flash column chromatography on a silica gel eluting with light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (7:3)
to give the oxazolidin-2-one (rac)-anti-45 (18 mg, 4\%) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.65; mp $74-76{ }^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.31-7.15(5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH}$; $\mathrm{Ph}), 7.14(2 \mathrm{H}, \mathrm{dt}, J 8.2$ and $1.2,2 \times \mathrm{CH}$; Ar), $6.98(2 \mathrm{H}, \mathrm{dt}, J 8.1$ and $1.2,2 \times \mathrm{CH}$; Ar), 5.26 ( $1 \mathrm{H}, \mathrm{dd}, J 8.6$ and 3.2, PhCHN), 5.16 ( $1 \mathrm{H}, \mathrm{q}, J$ 7.1, $\mathrm{ArCHCH}_{3}$ ), $4.51\left(1 \mathrm{H}, \mathrm{t}, J 8.6, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.16(1 \mathrm{H}, \mathrm{dd}, J 8.6$ and 3.1, $\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}$ ) and $1.56\left(3 \mathrm{H}, \mathrm{d}, J 7.1, \mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right)$ 173.9 ( $\mathrm{NC}=\mathrm{O}$ ), 152.9 ( $\mathrm{OC}=\mathrm{O}$ ), 138.1 ( $i-\mathrm{C} ; \mathrm{Ar)}$,133.0 (i-C; Ph), 130.9 (i-CCl; Ar), $129.5^{2}, 128.9^{2}, 128.6^{3}$ and $125.8^{2}(9 \times \mathrm{CH} ; \mathrm{Ar}$ and Ph$)$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+} 347.1154 ; \mathrm{C}_{18} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 347.1157 ); the oxazolidin-2-one (rac)-syn-45 ( $0.26 \mathrm{~g}, 58 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] 0.35 ; mp $116-117{ }^{\circ} \mathrm{C} ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1782$ $(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 7.33-7.23(3 \mathrm{H}, \mathrm{m}$, $3 \times \mathrm{CH}$; Ph), $7.19(2 \mathrm{H}, \mathrm{dt}, J 8.4$ and $2.0,2 \times \mathrm{CH}$; Ar), $7.02(2 \mathrm{H}, \mathrm{dt}, J$ 8.4 and $2.0,2 \times \mathrm{CH}$; Ar), $6.96(2 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.8$ and $1.7,2 \times \mathrm{CH}$; Ph), 5.45 (1H, dd, J 9.0 and 4.8, PhCHN), 4.99 ( $1 \mathrm{H}, \mathrm{q}, J 7.0, \mathrm{ArCHCH}_{3}$ ), 4.58 $\left(1 \mathrm{H}, \mathrm{t}, J 9.0, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.50\left(1 \mathrm{H}, \mathrm{dd}, J 9.0\right.$ and $\left.4.8, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$ and 1.30 (3H, d, J 7.0, $\mathrm{ArCHCH}_{3}$ ); $\delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 173.8(\mathrm{NC}=\mathrm{O}), 152.8$ $(\mathrm{OC}=\mathrm{O}), 138.2$ (i-CC; Ar), 133.2 (i-C; Ph), 132.8 (i-CCl; Ar), 129.7, ${ }^{2}$ $128.8,{ }^{2} 128.6,{ }^{1} 128.6^{2}$ and $125.6^{2}(9 \times \mathrm{CH}$; Ph and Ar$), 69.4\left(\mathrm{CH}_{2} \mathrm{O}\right)$, 57.9 ( PhCHN ), $43.8\left(\mathrm{ArCHCH}_{3}\right)$ and $18.9\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+} \quad 347.1154 ; \quad \mathrm{C}_{18} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 347.1157).

### 4.39. Synthesis of ethyl 2-oxa-3-[(4-chlorophenyl)propanoyl]-oxazolidin-4-carboxylate (rac)-anti-51 and ethyl 2-oxa-3-[(4-chlorophenyl)propanoyl]-oxazolidin-4-carboxylate (rac)-syn51

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )- $\mathbf{1 4}$ ( $0.21 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and pentafluorophenyl 2-(4-chlorophenyl)propanoate (rac)-19 ( $0.53 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones 51 (ratio 95:5 syn-:anti). The crude residue was purified by flash column chromatography on a silica gel eluting with light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (7:3) to give the oxazolidin-2-one (rac)-anti-51 ( $13 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40$60{ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.31; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1790(\mathrm{OC}=0)$, $1748(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.30-7.28$ $(4 \mathrm{H}, \mathrm{m}, 4 \times \mathrm{CH} ; \mathrm{Ar}), 5.01\left(1 \mathrm{H}, \mathrm{q}, J 6.8, \mathrm{ArCHCH}_{3}\right), 4.72(1 \mathrm{H}, \mathrm{dd}, J$ 9.3 and $3.6, \mathrm{EtO}_{2} \mathrm{CCHN}$ ), $4.38\left(1 \mathrm{H}, \mathrm{t}, J 9.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.24-4.19$ $\left(3 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right.$ and $\left.\mathrm{OCH}_{2} \mathrm{CH}_{3}\right), 1.43\left(3 \mathrm{H}, \mathrm{d}, J 6.8, \mathrm{ArCHCH}_{3}\right)$ and $1.23\left(3 \mathrm{H}, \mathrm{t}, \mathrm{J} 7.1, \mathrm{OCH}_{2} \mathrm{CH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 173.7(\mathrm{NC}=\mathrm{O})$, 167.8 ( $\mathrm{EtOC}=0$ ), 151.8 ( $\mathrm{OC}=0$ ), 138.1 ( $i-\mathrm{CC} ; \mathrm{Ar)}$,133.0 ( $i-\mathrm{CCl} ; \mathrm{Ar)}$, $129.3^{2}$ and $128.0^{2}\left(4 \times \mathrm{CH}\right.$; Ar), $65.8\left(\mathrm{CH}_{2} \mathrm{O}\right.$; oxazolidin-2-one $)$, $64.2\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right), 55.5\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 42.6\left(\mathrm{ArCHCH}_{3}\right), 19.1\left(\mathrm{ArCHCH}_{3}\right)$ and $13.8\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}, 343.1059 ; \mathrm{C}_{15} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{5}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 343.1055 ); and the oxazolidin-2-one (rac)-syn-51 ( $0.239 \mathrm{~g}, 54 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.20 ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1790$ $(\mathrm{OC}=\mathrm{O}), 1745(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ $7.30-7.27(4 \mathrm{H}, \mathrm{s}, 4 \times \mathrm{CH} ; \mathrm{Ar}), 4.93\left(1 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{PhCHCH}_{3}\right), 4.87$ $\left(1 \mathrm{H}, \mathrm{dd}, J 9.6\right.$ and $\left.4.8, \mathrm{EtO}_{2} \mathrm{CCHN}\right), 4.47\left(1 \mathrm{H}, \mathrm{t}, J 9.6, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$, $4.18\left(1 \mathrm{H}, \mathrm{dd}, J 9.6\right.$ and $\left.4.8, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{O}\right), 4.07(1 \mathrm{H}, \mathrm{dq}, J 15.0$ and 7.2 , $\left.\mathrm{OCH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right), 4.05\left(1 \mathrm{H}, \mathrm{dq}, J 15.0\right.$ and $\left.7.2, \mathrm{OCH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right), 1.39(3 \mathrm{H}$, $\left.\mathrm{d}, J 7.2, \mathrm{ArCHCH}_{3}\right)$ and $1.09\left(3 \mathrm{H}, \mathrm{t}, J 7.2, \mathrm{OCH}_{2} \mathrm{CH}_{3}\right) ; \delta_{\mathrm{C}}(100 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 173.8(\mathrm{NC}=\mathrm{O})$, $167.8(\mathrm{EtOC}=0)$, $151.6(\mathrm{OC}=\mathrm{O}), 138.3$ ( $i-\mathrm{C}$; $\mathrm{Ar}), 132.9$ ( $i-\mathrm{CCl}$; Ar ), $129.6^{2}$ and $128.3^{2}\left(4 \times \mathrm{CH}\right.$; Ar ), $65.7\left(\mathrm{CH}_{2} \mathrm{O}\right.$; oxazolidin-2-one), $64.3\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right), \quad 55.5 \quad\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 42.5$ $\left(\mathrm{ArCHCH}_{3}\right), 19.3\left(\mathrm{ArCHCH}_{3}\right)$ and $13.7 \quad\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 343.1057; $\mathrm{C}_{15} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{5}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$, 343.1055).

### 4.40. Synthesis of 4-methyl-5-phenyl-3-[2-(6-methoxynaph-

 thalene-2-yl)-propanoyl]-oxazolidin-2-one (rac)-anti,syn-26 and 3-[2-(6-methoxynaphthalene-2-yl)-propanoyl]-4-methyl-5-phenyl-oxazolidin-2-one (rac)-syn,syn-26In the same way as the oxazolidin-2-one (rac)-20, $n-\operatorname{BuLi}(0.6 \mathrm{~mL}$, 2.5 M in hexane, 1.50 mmol ), 4-methyl-5-phenyl-oxazolidin-2-one ( $4 R S, 5 S R)-(\mathrm{rac})-11 \quad(0.24 \mathrm{~g}, \quad 1.36 \mathrm{mmol})$ and pentafluorophenyl 2-(6-methoxynaphthalene-2-yl)propanoate (rac)-6 ( $0.59 \mathrm{~g}, 1.50$ $\mathrm{mmol})$, gave a separable mixture of two diastereoisomeric oxazoli-din-2-ones 26 (ratio: 73:27 syn,syn-:anti,syn-). The crude residue was purified by flash column chromatography on silica gel eluting with [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3)] to give the oxazolidin-2-one (rac)-anti,syn-26 (91 mg, 17\%) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.65 ; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1776(\mathrm{OC}=\mathrm{O})$ and $1697(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 7.76 ( $1 \mathrm{H}, \mathrm{d}, \mathrm{J} 1.8, \mathrm{CH}$; Ar), 7.72 ( $2 \mathrm{H}, \mathrm{dd}, J 8.7$ and $2.5,2 \times \mathrm{CH}$; Ar), 7.49 ( $1 \mathrm{H}, \mathrm{dd}, J 8.4$ and $1.8, \mathrm{CH}$; Ar), $7.41-7.32(3 \mathrm{H}$, $\mathrm{m}, 3 \times \mathrm{CH}$; Ph), $7.27-7.23$ ( $2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH}$; Ph), $7.14(1 \mathrm{H}, \mathrm{dd}, J 8.4$ and $1.8, \mathrm{CH} ; \mathrm{Ar}$ ) and 7.11 ( 1 H , br s, CH; Ar), 5.43 ( $1 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.1, \mathrm{PhCHO}$ ), $5.27\left(1 \mathrm{H}, \mathrm{q}, \mathrm{J} 6.9, \mathrm{ArCHCH}_{3}\right), 4.71-4.61\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{3} \mathrm{CHN}\right), 3.90(3 \mathrm{H}, \mathrm{s}$, $\left.\mathrm{OCH}_{3}\right), 1.57\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9, \mathrm{ArCHCH}_{3}\right)$ and $0.94\left(3 \mathrm{H}, \mathrm{J} 6.4, \mathrm{CH}_{3} \mathrm{CHN}\right) ; \delta_{\mathrm{C}}$ ( $100 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 174.5 ( $\mathrm{NC}=\mathrm{O}$ ), 157.5 ( $i-\mathrm{CO}$ ), 152.6 ( $\mathrm{OC}=\mathrm{O}$ ), 135.6, 133.7, 133.2 and 129.3 ( $4 \times i-\mathrm{C}$; Ar and Ph ), 129.0, 127.1, 126.7, 126.6, 118.9 and $105.5(6 \times \mathrm{CH}$; Ar$), 128.8,{ }^{1} 128.7^{2}$ and $125.6^{2}(5 \times \mathrm{CH} ; \mathrm{Ph}), 78.6(\mathrm{PhCHO}), 55.4\left(\mathrm{CH}_{3} \mathrm{CHN}\right), 55.3\left(\mathrm{OCH}_{3}\right)$, $43.2\left(\mathrm{ArCHCH}_{3}\right), 19.2\left(\mathrm{ArCHCH}_{3}\right)$ and $14.5\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 407.1964; $\mathrm{C}_{24} \mathrm{H}_{27} \mathrm{~N}_{2} \mathrm{O}_{4}$ requires $\mathrm{MNH}_{4}{ }^{+}$407.1965); and oxazolidin-2-one (rac)-syn,syn-26 ( $0.25 \mathrm{~g}, 47 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.55; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1782(\mathrm{OC}=\mathrm{O})$ and $1701(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 7.72(1 \mathrm{H}, \mathrm{d}, \mathrm{J} 1.5, \mathrm{CH} ; \mathrm{Ar}), 7.68(2 \mathrm{H}, \mathrm{d}, \mathrm{J} 8.6,2 \times \mathrm{CH} ; \mathrm{Ar}), 7.45$ ( 1 H , dd, $J 8.6$ and 1.8, CH; Ar), 7.31-7.27 (3H, m, $3 \times \mathrm{CH}$; Ph), 7.167.07 ( $3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH}$; Ar and Ph ), 7.05 ( 1 H , br s, CH; Ar), 5.62 ( $1 \mathrm{H}, \mathrm{d}$, $J 7.4, \mathrm{PhCHO}), 5.20\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}\right), 4.88-4.78(1 \mathrm{H}, \mathrm{m}$, $\mathrm{CH}_{3} \mathrm{CHN}$ ), $3.90\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} \mathrm{O}\right), 1.57\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9, \mathrm{ArCHCH}_{3}\right)$ and 0.71 (3H, d, J 6.4, $\left.\mathrm{CH}_{3} \mathrm{CHN}\right)$; $\delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.3(\mathrm{NC}=\mathrm{O}), 157.6$ ( $i-\mathrm{CO} ; \mathrm{Ar}$ ), $152.5(\mathrm{OC}=\mathrm{O}), 135.4,133.6,133.3$ and 129.3 ( $4 \times i-\mathrm{C} ; \mathrm{Ar}$ and Ph$), 128.9,127.1,126.7,126.7,118.8$ and $105.5(6 \times \mathrm{CH}$; Ar), $128.7,{ }^{1} 128.5^{2}$ and $125.6^{2}\left(5 \times \mathrm{CH}\right.$; Ph ), $78.7(\mathrm{PhCHO}), 55.3\left(\mathrm{OCH}_{3}\right)$, $54.6\left(\mathrm{CH}_{3} \mathrm{CHN}\right), 43.5\left(\mathrm{ArCHCH}_{3}\right), 19.3\left(\mathrm{ArCHCH}_{3}\right)$ and $14.1\left(\mathrm{CH}_{3} \mathrm{CHN}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}, 407.1968 ; \mathrm{C}_{24} \mathrm{H}_{27} \mathrm{~N}_{2} \mathrm{O}_{4}$ requires $\mathrm{MNH}_{4}{ }^{+}$407.1965).
4.41. Synthesis of 4-benzyl-3-[2-(6-methoxynaphthalene-2-yl)-propanoyl]-oxazolidin-2-one (rac)-anti-33 and 4-benzyl-3-[2-(6-methoxynaphthalene-2-yl)-propanoyl]-oxazolidin-2one (rac)-syn-33

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-benzyl-oxazolidin-2-one ( rac )-12 ( $0.24 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and the pentafluorophenyl 2-(6-methoxynaphthalene-2-yl)propanoate ( rac )-6 ( $0.59 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2ones (rac)-33 (ratio: 72:28 syn-:anti-). The crude residue was purified by flash column chromatography on silica gel eluting with [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ )] to give the oxazolidin-2-one (rac)-anti-33 ( $0.106 \mathrm{~g}, 20 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.42 ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1697(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.74(1 \mathrm{H}, \mathrm{br} \mathrm{s}, \mathrm{CH} ; \mathrm{Ar}), 7.70(2 \mathrm{H}, \mathrm{d}, J 8.2$, $2 \times \mathrm{CH} ; \mathrm{Ar}), 7.48$ ( $1 \mathrm{H}, \mathrm{dd}, J 8.4$ and $1.8, \mathrm{CH} ; \mathrm{Ar}$ ), $7.37-7.21$ ( 5 H , $\mathrm{m}, 5 \times \mathrm{CH}$; Ph), 7.15 ( 1 H , dd, $J 8.4$ and $1.8, \mathrm{CH}$; Ar), 7.08 ( 1 H , br s, $\mathrm{CH} ; \mathrm{Ar}), 5.26\left(1 \mathrm{H}, \mathrm{q}, \mathrm{J} 6.9, \mathrm{ArCHCH}_{3}\right), 4.62-4.54(1 \mathrm{H}, \mathrm{m}, \mathrm{BnCHN})$, $4.08\left(1 \mathrm{H}, \mathrm{dd}, J 9.1\right.$ and $\left.2.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.97\left(1 \mathrm{H}, \mathrm{t}, J 9.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$, $3.89\left(3 \mathrm{H}, \mathrm{s}, \mathrm{OCH}_{3}\right), 3.36\left(1 \mathrm{H}, \mathrm{dd}, J 13.1\right.$ and $\left.3.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right), 2.82$ ( $1 \mathrm{H}, \mathrm{dd}, J 13.1$ and $3.2, \mathrm{CH}_{\mathrm{A}} H_{\mathrm{B}} \mathrm{Ph}$ ) and $1.62\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{ArCHCH}_{3}\right)$;
$\delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.7$ ( $\mathrm{NC}=0$ ), 157.6 (i-CO; Ar), 152.9 (OC=O; $\mathrm{Ar}), 135.3,135.4,133.8$ and $129.8(4 \times i-\mathrm{C}$; Ar and Ph ), 129.3, 127.1, 126.7, 126.6, 118.9 and $105.5\left(6 \times \mathrm{CH}\right.$; Ar), $128.9,{ }^{2} 128.8^{2}$ and $127.3^{1}(5 \times \mathrm{CH} ; \mathrm{Ph}), 65.8\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.8(\mathrm{BnNCH}), 55.2\left(\mathrm{CH}_{3} \mathrm{O}\right)$, $42.9\left(\mathrm{ArCHCH}_{3}\right), 37.9\left(\mathrm{CH}_{2} \mathrm{Ph}\right)$ and $19.4\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MNH}_{4}^{+}, 407.1960 ; \mathrm{C}_{24} \mathrm{H}_{27} \mathrm{~N}_{2} \mathrm{O}_{4}$ requires $\mathrm{MNH}_{4}{ }^{+} 407.1965$ ); and the oxazolidin-2-one (rac)-syn-33 ( $0.274 \mathrm{~g}, 52 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.35; mp 134-136 ${ }^{\circ} \mathrm{C}$; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and $1699(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.82$ ( $1 \mathrm{H}, \mathrm{d}, J 1.5, \mathrm{CH} ; \mathrm{Ar}$ ), 7.73 ( $2 \mathrm{H}, \mathrm{d}, J 8.6,2 \times \mathrm{CH}$; Ar), 7.54 ( 1 H , dd, $J 8.6$ and 1.5 ; Ar), 7.15-7.10 (3H, m, $3 \times \mathrm{CH}$; Ph), 7.13 ( $1 \mathrm{H}, \mathrm{br}$ s, CH; Ar), 7.05-7.02 ( 1 H , br d, J 8.6, CH; Ar), 6.88 ( 2 H , br d, J $7.1,2 \times \mathrm{CH}$; Ph), 5.26 ( $1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}$ ), $4.79-4.71$ ( $1 \mathrm{H}, \mathrm{m}, \mathrm{BnCHN}$ ), 4.16 ( $1 \mathrm{H}, \mathrm{t}, J$ $\left.8.9, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.04\left(1 \mathrm{H}, \mathrm{dd}, J 8.9\right.$ and $\left.3.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.91(3 \mathrm{H}, \mathrm{s}$, $\left.\mathrm{OCH}_{3}\right), 3.06\left(1 \mathrm{H}, \mathrm{dd}, J 13.6\right.$ and $\left.3.5, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}\right), 2.55(1 \mathrm{H}, \mathrm{dd}, J 13.6$ and $8.7, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{Ph}$ ) and $1.60\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9, \mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}(100 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 174.5(\mathrm{NC}=\mathrm{O}), 157.7$ (i-CO; Ar), 152.9 ( $\mathrm{OC}=\mathrm{O}$ ), 135.2, 134.8, 133.7 and 129.7 ( $4 \times i-\mathrm{C} ; \mathrm{Ar}$ and Ph ), 129.3, 127.2, 126.6, 125.9, 118.9 and $105.5(6 \times \mathrm{CH}$; Ar$), 128.9,{ }^{2} 128.7^{2}$ and $128.5^{1}$ $(5 \times \mathrm{CH} ; \mathrm{Ph}), 65.8\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.2\left(\mathrm{CH}_{3} \mathrm{O}\right), 54.8(\mathrm{BnCHN}), 43.0$ $\left(\mathrm{ArCHCH}_{3}\right), 37.3\left(\mathrm{CH}_{2} \mathrm{Ph}\right)$ and $19.0\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 407.1971. $\mathrm{C}_{24} \mathrm{H}_{27} \mathrm{ClN}_{2} \mathrm{O}_{4}$ requires $\mathrm{MNH}_{4}{ }^{+}$, 407.1965).

### 4.42. Synthesis of 4-isopropyl-3-[2-(6-methoxy-naphthlene-2-yl)propanoyl]-oxazolidin-2-one (rac)-anti-40 and 4-isopropyl-3-[2-(6-methoxy-naphthlene-2-yl)propanoyl]-oxazolidin-2-one (rac)-syn-40

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )- $\mathbf{1 3}$ $(0.17 \mathrm{~g}, 1.36 \mathrm{mmol})$ and the pentafluorophenyl 2 -(6-methoxy-naphthalene-2-yl)propanoate (rac)-6 ( $0.59 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2-ones $\mathbf{4 0}$ (ratio: 92:8 syn-:anti-). The crude residue was purified by flash column chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2one (rac)-anti-40 (19 mg, 4\%) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ( $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.51; mp $122-124^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and $1701(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 7.70(1 \mathrm{H}, \mathrm{s}, \mathrm{CH} ; \mathrm{Ar}), 7.68(2 \mathrm{H}, \mathrm{dd}, \mathrm{J} 8.4$ and $2.7,2 \times \mathrm{CH}$; Ar$\mathrm{OCH}_{3}$ ), $7.46(1 \mathrm{H}, \mathrm{dd}, J 8.7$ and 1.6, Ar), 7.13 ( $1 \mathrm{H}, \mathrm{dd}, J 8.7$ and 1.7 , $\mathrm{CH} ; \mathrm{Ar}), 7.09(1 \mathrm{H}, \mathrm{s}, \mathrm{CH} ; \mathrm{Ar}), 5.28\left(1 \mathrm{H}, \mathrm{q}, \mathrm{J} 6.9, \mathrm{ArCHCH}_{3}\right), 4.36-$ $4.31(1 \mathrm{H}, \mathrm{dt}, J 9.1$ and $3.2, i-\operatorname{PrCHN}), 4.10(1 \mathrm{H}, \mathrm{dd}, J 9.1$ and 3.2 , $\left.\mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.05\left(1 \mathrm{H}, \mathrm{t}, J 9.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.88\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} \mathrm{O}\right), 2.50-$ $2.39\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.57\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 6.9, \mathrm{ArCHCH}_{3}\right), 0.91(3 \mathrm{H}, \mathrm{d}, J$ $\left.6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.90\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}(100 \mathrm{MHz}$; $\mathrm{CDCl}_{3}$ ) 174.7 ( $\mathrm{NC}=\mathrm{O}$ ), 157.6 (i-C-O; Ar), 153.7 ( $\mathrm{OC}=\mathrm{O}$ ), 135.4, 133.8 and 128.8 ( $3 \times i-\mathrm{C}$; Ar), 129.3, 127.0, 126.8, 126.6, 118.8 and $105.5(6 \times \mathrm{CH}$; Ar$), 63.0\left(\mathrm{CH}_{2} \mathrm{O}\right), 59.0(i-\mathrm{PrCHN}), 55.2\left(\mathrm{OCH}_{3}\right)$, $42.8 \quad\left(\mathrm{ArCHCH}_{3}\right), \quad 28.5 \quad\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), \quad 19.6 \quad\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right), \quad 17.9$ $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $14.6 \quad\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}$, 342.1707; $\mathrm{C}_{20} \mathrm{H}_{24} \mathrm{NO}_{4}$ requires $\mathrm{MH}^{+}, 342.1700$ ); and the oxazolidin-2-one (rac)-syn-40 ( $0.25 \mathrm{~g}, 54 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.34 ; mp 92$94^{\circ} \mathrm{C} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and $1701(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) 7.72 ( 1 H , br d, J 1.7, CH; Ar), 7.69 ( $2 \mathrm{H}, \mathrm{dd}, J 8.6$ and $2.5,2 \times \mathrm{CH}$; Ar), 7.45 ( 1 H , dd, J 8.6 and $1.8, \mathrm{CH}$; Ar), 7.13 ( $1 \mathrm{H}, \mathrm{dd}, J 8.6$ and $1.8, \mathrm{CH}$; Ar), $7.09(1 \mathrm{H}, \mathrm{s}, \mathrm{CH} ; \mathrm{Ar}), 5.26(1 \mathrm{H}, \mathrm{q}, J$ $\left.6.9, \mathrm{ArCHCH}_{3}\right), 4.52-4.46(1 \mathrm{H}, \mathrm{dt}, J 8.9$ and $3.2, i-\mathrm{PrCHN}), 4.21$ $\left(1 \mathrm{H}, \mathrm{t}, J 8.9, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.06\left(1 \mathrm{H}, \mathrm{dd}, J 8.9\right.$ and $\left.3.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.88$ $\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} \mathrm{O}\right), 2.25-2.13\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.53(3 \mathrm{H}, \mathrm{d}, J 6.9$, $\left.\mathrm{ArCHCH}_{3}\right), 0.75\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.38(3 \mathrm{H}, \mathrm{d}, J 6.9$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.6$ ( $\mathrm{NC}=0$ ), 157.6 ( $i-\mathrm{C}-\mathrm{O} ; \mathrm{Ar)}$ ), 153.5 ( $\mathrm{OC}=\mathrm{O}$ ), 135.7, 133.7 and 128.9 ( $3 \times \mathrm{i}-\mathrm{C}$; Ar ), 129.4, 127.0, 126.7, 126.6, 118.8 and $105.5(6 \times \mathrm{CH}$; Ar$)$, $62.9\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.1$
( $i$ - PrCHN ), $55.3\left(\mathrm{OCH}_{3}\right), 43.2\left(\mathrm{ArCHCH}_{3}\right), 27.9\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 18.7$ $\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right), 17.7\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $14.0\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}$, 342.1701; $\mathrm{C}_{20} \mathrm{H}_{24} \mathrm{NO}_{4}$ requires $\mathrm{MH}^{+}, 342.1700$ ).
4.43. Synthesis of 4-phenyl-3-[2-(6-methoxynaphthalene-2-yl)-propanoyl]-oxazolidin-2-one (rac)-anti-9 and 4-phenyl-3-[2-(6-methoxynaphthalene-2-yl)-propanoyl]-oxazolidin-2-one (rac)-syn-9

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), 4-phenyl-oxazolidin-2-one ( rac )-8 $(0.22 \mathrm{~g}, 1.36 \mathrm{mmol})$ and the pentafluorophenyl 2-(6-methoxynaphthalene-2-yl)propanoate (rac)-6 ( $0.59 \mathrm{~g}, 1.50 \mathrm{mmol}$ ), gave a separable mixture of two diastereoisomeric oxazolidin-2ones 9 (ratio: 95:5 syn-:anti-). The crude residue was purified by flash column chromatography on silica gel eluting with [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (7:3)] to give oxazoli-din-2-one (rac)-anti-9 ( $16 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.45; $v_{\max }$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1782(\mathrm{OC}=\mathrm{O})$ and $1705(\mathrm{NC}=0) ; \delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 7.75(1 \mathrm{H}, \mathrm{s}, \mathrm{CH} ; \mathrm{Ar}), 7.69(2 \mathrm{H}, \mathrm{dd}, J 8.6$ and $2.6,2 \times \mathrm{CH}$; Ar), 7.49-7.30 ( $6 \mathrm{H}, \mathrm{m}, 6 \times \mathrm{CH}$; Ar and Ph), 7.15-7.10 ( $2 \mathrm{H}, \mathrm{m}$, $2 \times \mathrm{CH}$; Ar and Ph ), $5.31\left(1 \mathrm{H}, \mathrm{dd}, J 8.6\right.$ and $\left.3.3, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 5.27$ $\left(1 \mathrm{H}, \mathrm{q}, J 7.0, \mathrm{ArCHCH}_{3}\right), 4.47\left(1 \mathrm{H}, \mathrm{t}, J 8.6, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.17(1 \mathrm{H}, \mathrm{dd}, J$ 8.6 and $\left.3.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.90\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} \mathrm{O}\right)$ and $1.48(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.0$, $\mathrm{ArCHCH}_{3}$ ); $\delta_{\mathrm{C}}\left(100.6 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.1$ ( $\mathrm{NC}=\mathrm{O}$ ), 157.6 ( $i-\mathrm{OC} ; \mathrm{Ar}$ ), $153.2(\mathrm{OC}=\mathrm{O}), 139.3,135.3,133.7$ and 128.8 ( $4 \times i-\mathrm{C}$; Ar ), 129.2, 127.1, 126.8, 126.7, 118.9 and $105.5(6 \times \mathrm{CH}$; Ar$), 128.8,{ }^{2} 128.6^{1}$ and $125.7^{2}\left(5 \times \mathrm{CH}\right.$; Ph), $69.6\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.0(\mathrm{PhCHN}), 55.2\left(\mathrm{CH}_{3} \mathrm{O}\right)$, $43.0\left(\mathrm{ArCHCH}_{3}\right)$ and $19.3\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}, 376.1545$; $\mathrm{C}_{23} \mathrm{H}_{22} \mathrm{NO}_{4}$ requires $\mathrm{MH}^{+}, 376.1543$ ); and the oxazolidin-2-one (rac)-syn-9 ( $0.32 \mathrm{~g}, 62 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.33 ; mp 137- $139^{\circ} \mathrm{C}$; $v_{\text {max }}$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1699(\mathrm{NC}=\mathrm{O}) ; \delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\mathrm{CDCl}_{3}$ ) 7.60 ( $1 \mathrm{H}, \mathrm{d}, J 8.4, \mathrm{CH} ; \mathrm{Ar}$ ), 7.51 ( $1 \mathrm{H}, \mathrm{br} \mathrm{d}, \mathrm{J} 8.4, \mathrm{CH} ; \mathrm{Ar}$ ), 7.33 ( $1 \mathrm{H}, \mathrm{s}, \mathrm{CH} ; \mathrm{Ar}$ ), $7.29-7.24$ ( $3 \mathrm{H}, \mathrm{m}, 3 \times \mathrm{CH} ; \mathrm{Ph}$ ), 7.15-7.10 $(2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH} ; \mathrm{Ph}), 6.91(2 \mathrm{H}, \mathrm{br} \mathrm{d}, J 7.0,2 \times \mathrm{CH} ; \mathrm{Ar}), 5.46(1 \mathrm{H}$, dd, $J 8.9$ and $5.2, \mathrm{PhCHN}), 5.20\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}\right), 4.60(1 \mathrm{H}$, $\left.\mathrm{t}, J 9.1, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.03\left(1 \mathrm{H}, \mathrm{dd} J 8.9\right.$ and $\left.5.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 3.92(3 \mathrm{H}, \mathrm{s}$, $\mathrm{CH}_{3} \mathrm{O}$ ) and $1.44\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ 173.6 ( $\mathrm{NC}=\mathrm{O}$ ), 157.6 ( $i-\mathrm{CO}$; Ar), 153.0 ( $\mathrm{OC}=0$ ), 138.2, 135.1, 133.6 and $128.8(4 \times i-\mathrm{C} ; \mathrm{Ar}$ and Ph$)$, 129.4, 127.0, 126.4, 126.3, 118.7 and $105.5\left(6 \times \mathrm{CH}\right.$; Ar), $128.8,{ }^{2} 127.2^{1}$ and $125.9^{2}(5 \times \mathrm{CH}$; $\mathrm{Ph}), 69.5\left(\mathrm{CH}_{2} \mathrm{O}\right), 57.8(\mathrm{PhCHN}), 55.3\left(\mathrm{CH}_{3} \mathrm{O}\right), 43.8\left(\mathrm{ArCHCH}_{3}\right)$ and $18.7\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MH}^{+}, 376.1553 ; \mathrm{C}_{23} \mathrm{H}_{22} \mathrm{NO}_{4}$ requires $\mathrm{MH}^{+}$, 376.1543).
> 4.44. Synthesis of ethyl 3-[2-(6-methoxynaphthalene-2-yl)-propanoyl]-oxazolidin-2-one 4-carboxylate (rac)-anti-52 and ethyl 3-[2-(6-methoxynaphthalene-2-yl)propanoyl]-oxazolidin-2-one 4-carboxylate (rac)-syn-52

In the same way as the oxazolidin-2-one (rac)-20, $n$-BuLi ( $0.6 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.50 mmol ), oxazolidin-2-one ( rac )-14 ( $0.21 \mathrm{~g}, 1.36 \mathrm{mmol}$ ) and the pentafluorophenyl 2-(6-methoxy-naphthalene-2-yl)propanoate ( rac )-6 $(0.59 \mathrm{~g}, 1.50 \mathrm{mmol})$, gave a separable mixture of two diastereoisomeric oxazolidin-2-ones 52 (ratio: 97:3 syn-:anti-). The crude residue was purified by flash column chromatography on a silica gel [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3)] to give the oxazolidin-2-one (rac)-anti-52 ( $9 \mathrm{mg}, 2 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.28 ; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ 1791 ( $\mathrm{OC}=\mathrm{O}$ ), $1751(\mathrm{CC}=\mathrm{O})$ and $1705(\mathrm{NC}=0)$; $\delta_{\mathrm{H}}(400 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 7.72(1 \mathrm{H}, \mathrm{s}, \mathrm{CH} ; \mathrm{Ar}), 7.67(2 \mathrm{H}, \mathrm{dd}, \mathrm{J} 8.4$ and $2.6,2 \times \mathrm{CH}$; Ar), 7.44 (1H, dd, J 8.4 and $2.6, \mathrm{CH}$; Ar ), 7.11 ( $1 \mathrm{H}, \mathrm{dd}, J 8.4$ and $2.6, \mathrm{CH}$; Ar ), $7.07(1 \mathrm{H}, \mathrm{s}, \mathrm{CH} ; \mathrm{Ar}), 5.24\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}\right)$,
$4.76\left(1 \mathrm{H}, \mathrm{dd}, J 9.1\right.$ and 3.7, $\left.\mathrm{EtO}_{2} \mathrm{CCHN}\right), 4.37-4.20(4 \mathrm{H}, \mathrm{m}$, $\left.2 \times \mathrm{CH}_{2} \mathrm{O}\right), 3.88\left(3 \mathrm{H}, \mathrm{s}, \mathrm{OCH}_{3}\right), 1.58\left(3 \mathrm{H}, \mathrm{d}, J 6.9, \mathrm{ArCHCH}_{3}\right)$ and $1.31\left(3 \mathrm{H}, \mathrm{t}, \mathrm{J} 6.9, \mathrm{OCH}_{2} \mathrm{CH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.5(\mathrm{NC}=\mathrm{O})$, 168.6 ( $\mathrm{EtOC}=0$ ), 157.7 ( $i$-CO; Ar), 152.0 ( $\mathrm{OC}=0$ ), 135.0, 133.8 and 129.3 ( $3 \times i-\mathrm{C}$; Ar), 128.8, 127.1, 126.8, 126.7, 119.0 and 105.5 $(6 \times \mathrm{CH}$; Ar$), 64.2\left(\mathrm{CH}_{2} \mathrm{O}\right), 62.5\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.8\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 55.3$ $\left(\mathrm{OCH}_{3}\right), 42.8\left(\mathrm{ArCHCH}_{3}\right), 19.1\left(\mathrm{ArCHCH}_{3}\right)$ and $14.0\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MH}^{+}, 372.1445, \mathrm{C}_{20} \mathrm{H}_{22} \mathrm{NO}_{6}$ requires $\mathrm{MH}^{+}, 372.1442$ ); and the oxazolidin-2-one (rac)-syn-52 ( $0.29 \mathrm{~g}, 57 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.18 ; \mathrm{mp} 118-121^{\circ} \mathrm{C} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1789(\mathrm{OC}=\mathrm{O})$, $1745(\mathrm{CC}=\mathrm{O})$ and $1705(\mathrm{NC}=\mathrm{O})$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.74(1 \mathrm{H}, \mathrm{s}$, CH; Ar), 7.67 ( $2 \mathrm{H}, \mathrm{dd}, J 8.4$ and $2.6,2 \times \mathrm{CH}$; Ar), 7.44 ( 1 H , dd J 8.6 and $1.8, \mathrm{CH}$; Ar ), $7.13(1 \mathrm{H}, \mathrm{dd}, J 8.4$ and $2.6,2 \times \mathrm{CH}$; Ar ), 7.09 $(1 \mathrm{H}, \mathrm{s}, \mathrm{CH} ; \mathrm{Ar}), 5.16\left(1 \mathrm{H}, \mathrm{q}, J 6.9, \mathrm{ArCHCH}_{3}\right), 4.94(1 \mathrm{H}, \mathrm{dd}, J 9.7$ and $\left.4.9, \mathrm{EtO}_{2} \mathrm{CCHN}\right), 4.49\left(1 \mathrm{H}, \mathrm{t}, J 9.7, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.20(1 \mathrm{H}, \mathrm{dd}, J$ 9.7 and $\left.4.9, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.07\left(2 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{OCH}_{2} \mathrm{CH}_{3}\right), 3.88(3 \mathrm{H}, \mathrm{s}, \mathrm{O}$ $\left.\mathrm{CH}_{3}\right), 1.55(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.2, \mathrm{ArCHCH} 3)$ and $1.03\left(3 \mathrm{H}, \mathrm{t}, J 7.2, \mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$; $\delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 174.3$ ( $\mathrm{NC}=0$ ), 167.9 ( $\mathrm{EtOC}=0$; ester), 157.6 ( $\mathrm{OC}=0$ ), 151.9 ( $i-\mathrm{CO}$; Ar), 134.8, 133.7 and 128.9 ( $3 \times i-\mathrm{C}$; Ar), 129.1, 127.1, 126.9, 126.8, 118.7 and $105.6(6 \times \mathrm{CH}$; Ar), 64.1 $\left(\mathrm{CH}_{2} \mathrm{O}\right), 63.6\left(\mathrm{CH}_{2} \mathrm{O}\right), 55.6\left(\mathrm{EtO}_{2} \mathrm{CCHN}\right), 55.2\left(\mathrm{OCH}_{3}\right), 43.10$ $\left(\mathrm{ArCHCH}_{3}\right), 19.2\left(\mathrm{ArCHCH}_{3}\right)$ and $13.7\left(\mathrm{OCH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{MNH}_{4}^{+}$, 389.1703; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{6}$ requires $\mathrm{MNH}_{4}{ }^{+}$, 389.1707).
4.45. Parallel kinetic resolutions of active esters (rac)-6, (rac)-7, (rac)-15, (rac)-16, (rac)-17, (rac)-18 and (rac)-19 using a quasienantiomeric combination of oxazolidin-2-ones $(S)$ - 13 and $(R)$-8

See Ref. 15.
4.46. Parallel kinetic resolution of pentafluorophenyl 2-phenylpropanoate (rac)-15 with 4-isopropyl-oxazolidin-2-one (S)-13 and 4-phenyl oxazolidin-2-one ( $R$ )-8

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxazoli-din-2-one ( $S$ )- $\mathbf{1 3}$ ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-phenyl-oxazolidin-2-one $(R)-\mathbf{8}(0.106 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-phenylpropanoate (rac)-15 ( $0.458 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $S, S$ )-anti-34 (ratio 95:5:syn-:anti-) and oxazolidin-2-ones ( $S, R$ )-syn- and ( $R, R$ )-anti-41 (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give oxazolidin-2-one (S,S)-anti-34 ( $5 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.64 ; $v_{\text {max }}$ (film) $\mathrm{cm}^{-1}$ $1774(\mathrm{OC}=0)$ and $1701(\mathrm{NC}=0) ;[\alpha]_{\mathrm{D}}^{20}=+128.9\left(c 3.5, \mathrm{CHCl}_{3}\right)$ (Found $\mathrm{MH}^{+} 262.1434 ; \mathrm{C}_{15} \mathrm{H}_{20} \mathrm{NO}_{3}{ }^{+}$requires 262.1443); the oxaz-olidin-2-one ( $R, S$ )-syn- $\mathbf{3 4}$ ( $96 \mathrm{mg}, 57 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.43 ; v_{\max }$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1774(\mathrm{OC}=\mathrm{O})$ and $1703(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{20}=-19.8$ (c 3.3, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}$262.1432; $\mathrm{C}_{15} \mathrm{H}_{20} \mathrm{NO}_{3}{ }^{+}$requires 262.1443 ); the oxazolidin-2-one ( $R, R$ )-anti-41 ( $5 \mathrm{mg}, 3 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] $0.58 ; \mathrm{mp} 158-160{ }^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{20}=-165.2$ (c 2.0, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}$, 296.1282; $\mathrm{C}_{18} \mathrm{H}_{18} \mathrm{NO}_{3}{ }^{+}$requires 296.1287); the oxazolidin-2-one ( $S, R$ )-syn-41 ( $0.11 \mathrm{~g}, 57 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.42 ; \mathrm{mp} 140-142^{\circ} \mathrm{C}$; $v_{\max }$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and $1701(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{20}=+88.5(c$ 4.0, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}, 296.1286 ; \mathrm{C}_{15} \mathrm{H}_{18} \mathrm{NO}_{3}{ }^{+}$requires 296.1287). $R_{\mathrm{F}}$ differences [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)]-(S,S)-anti-34 ( $R_{\mathrm{F}} 0.64$ ); ( $R, S$ )-syn-34 ( $R_{\mathrm{F}} 0.43$ ); $(R, R)$-anti-41 ( $R_{\mathrm{F}} 0.58$ ) and ( $(, R)$-syn-41 ( $R_{\mathrm{F}} 0.42$ ).
4.47. Parallel kinetic resolution of pentafluorophenyl 2-phenylbutanoate (rac)-16 with 4-isopropyl-oxazolidin-2-one (S)-13 and 4-phenyl oxazolidin-2-one $(\boldsymbol{R})$-8

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxaz-olidin-2-one ( $S$ )- $\mathbf{1 3}$ ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-phenyl oxazolidin-2-one ( $R$ )-8 ( $0.106 \mathrm{~g}, 0.65 \mathrm{mmol}$ ) and pentafluorophenyl 2-phenylbutanoate (rac)-16 ( $0.478 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $(S, S$ )-anti- 35 (ratio 95:5:syn-:anti-) and oxazolidin-2-ones ( $S, R$ )-syn- and ( $R, R$ )-anti-42 (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give oxazolidin-2-one $(S, S)$-anti- $\mathbf{3 5}$ ( $6 \mathrm{mg}, 3 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.63; mp $65-67^{\circ} \mathrm{C}$; $[\alpha]_{\mathrm{D}}^{20}=+117.6\left(c 0.66, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=0)$ and $1697(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, 276.1612 ; \mathrm{C}_{16} \mathrm{H}_{22} \mathrm{NO}_{3}$ requires 276.1600); and the oxazolidin-2-one ( $R, S$ )-syn- 35 ( $114 \mathrm{mg}, 64 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.53; $[\alpha]_{D}^{20}=-24.6$ (c 5.0, $\mathrm{CHCl}_{3}$ ) \{for ( $(, R)$-syn-35; $\left.[\alpha]_{\mathrm{D}}^{20}=+22.4\left(c 6.9, \mathrm{CHCl}_{3}\right)\right\} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and 1697 ( $\mathrm{NC}=\mathrm{O}$ ) (Found $\mathrm{MH}^{+}, ~ 276.1587 ; \mathrm{C}_{16} \mathrm{H}_{22} \mathrm{NO}_{3}$ requires 276.1600); and the oxazolidin-2-one ( $R, R$ )-anti-42 ( $6 \mathrm{mg}, 3 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.55; mp $136-140^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{20}=-160.0\left(c 0.74, \mathrm{CHCl}_{3}\right)$; \{for (S,S)-anti-42; $[\alpha]_{\mathrm{D}}^{20}=+150.4$ (c 4.9, $\left.\mathrm{CHCl}_{3}\right)$ ); $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ $1780(\mathrm{OC}=\mathrm{O}), 1703(\mathrm{NC}=\mathrm{O})$ and 1600 (Ph) (Found $\mathrm{MH}^{+}$, 310.1430; $\mathrm{C}_{19} \mathrm{H}_{20} \mathrm{NO}_{3}$ requires 310.1443); and the oxazolidin-2one ( $(, R)$-syn-42 ( $0.122 \mathrm{~g}, 61 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.50 ; mp $82-84^{\circ} \mathrm{C}$; $[\alpha]_{\mathrm{D}}^{20}=+77.4$ (c 4.0, $\mathrm{CHCl}_{3}$ ) \{for ( $R, S$ )-syn-42; $[\alpha]_{\mathrm{D}}^{20}=-95.6$ (c 3.0, $\left.\left.\mathrm{CHCl}_{3}\right)\right\} ; v_{\text {max }}(\mathrm{film}) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and $1703(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, 310.1437 ; \mathrm{C}_{19} \mathrm{H}_{20} \mathrm{NO}_{3}$ requires 310.1443). $R_{\mathrm{F}}$ differences [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)]-(S,S)-anti-35 ( $R_{\mathrm{F}} 0.63$ ); ( $R, S$ )-syn-35 ( $R_{\mathrm{F}} 0.53$ ); ( $R, R$ )-anti-42 ( $R_{\mathrm{F}} 0.55$ ) and $(S, R)$ -syn-42 ( $R_{\mathrm{F}} 0.50$ ).
4.48. Parallel kinetic resolution of pentafluorophenyl 2-phenyl-3-methylbutanoate (rac)-17 with 4-isopropyl-oxazolidin-2-one $(S)$-13 and 4-phenyl-oxazolidin-2-one ( $R$ )-8

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxaz-olidin-2-one ( $S$ )-13 ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-phenyl oxazolidin-2-one $(R)-\mathbf{8}(0.106 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-phe-nyl-3-methylbutanoate (rac)-17 ( $0.499 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-synand ( $S, S$ )-anti-36 (ratio 79:21:syn-:anti-) and oxazolidin-2-ones $(S, R)$-syn- and ( $R, R$ )-anti-43 (ratio 84:16:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp 40-60 ${ }^{\circ}$ )/diethyl ether (7:3) to give an inseparable mixture of oxazolidin-2-ones ( $(S, S$ )-anti-36 and $(R, S)$-syn- $36(0.109 \mathrm{~g}, 58 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $\sim 0.82$; characterisation for ( $\left(S, S\right.$ )-anti-36; colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.82; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1770$ $(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, 290.1751 ; \mathrm{C}_{17} \mathrm{H}_{24} \mathrm{NO}_{3}{ }^{+}$requires $\mathrm{MH}^{+} 290.1751$ ); the oxazolidin-2-one ( $R, S$ )- $\mathbf{3 6}$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.82; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1772(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, 290.1751 ; \mathrm{C}_{17} \mathrm{H}_{24} \mathrm{NO}_{3}{ }^{+}$requires $\mathrm{MH}^{+} 290.1751$ ); and an inseparable mixture of oxazolidin-2-ones ( $R, R$ )-anti-43 and $(S, R)$-syn-43 $(0.127 \mathrm{~g}, 60 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $\sim 0.55 ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ $1780(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}, 341.1860$;
$\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 341.1860$ ). Characterisation data for oxazolidin-2-one ( $S, R$ )-syn-43; colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.55 ;[\alpha]_{\mathrm{D}}^{20}=+78.4$ (c 0.5, $\left.\left.\mathrm{CHCl}_{3}\right)\right] ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=0)$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 341.1860; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 341.1860$ ). $R_{\mathrm{F}}$ differences [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] -(S,S)-anti-36 ( $R_{\mathrm{F}} 0.82$ ); ( $R, S$ )-syn-36 ( $R_{\mathrm{F}} 0.82$ ); ( $R, R$ )-anti-43 ( $R_{\mathrm{F}} 0.62$ ) and ( $S, R$ )-syn-43 ( $R_{\mathrm{F}} 0.55$ ).

### 4.49. Parallel kinetic resolution of pentafluorophenyl 2-(4methylphenyl)propanoate (rac)-18 with 4-isopropyl-oxaz-olidin-2-one ( $S$ )-13 and 4-phenyl-oxazolidin-2-one ( $R$ )-8

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxazoli-din-2-one ( $S$ )- $\mathbf{1 3}$ ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-phenyl oxazolidin-2-one (R)-8 $(0.106 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-(4-methylphenyl)propanoate ( rac )-18 ( $0.479 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $(S, S$ )-anti-37 (ratio 98:2:syn-:anti-) and oxazolidin-2-ones ( $(, R, R$ )-synand ( $R, R$ )-anti-44 (ratio 98:2:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxaz-olidin-2-one ( $S, S$ )-anti-37 ( $2 \mathrm{mg}, 1 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ (light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.63; $[\alpha]_{\mathrm{D}}^{23}=+115.5\left(c \quad 0.7, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and 1701 ( $\mathrm{NC}=\mathrm{O}$ ); (Found $\mathrm{MNH}_{4}{ }^{+}$, 293.1857; $\mathrm{C}_{16} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$, 293.1860); the oxazolidin-2-one ( $R, S$ )-syn- 37 ( $0.107 \mathrm{~g}, 60 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60{ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.50; $[\alpha]_{\mathrm{D}}^{23}=-26.7\left(c 1.8, \mathrm{CHCl}_{3}\right)$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 293.1858; $\mathrm{C}_{16} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$, 293.1860); the oxazolidin-2-one ( $R, R$ )-anti-44 ( $6 \mathrm{mg}, 3 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ (light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.47 ; mp 124-126 ${ }^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{23}=-179.1\left(c 3.0, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1779(\mathrm{OC}=\mathrm{O})$ and $1699(\mathrm{NC}=\mathrm{O})$; (Found $\mathrm{MNH}_{4}^{+}, 341.1860$; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 341.1860$ ); and the oxazolidin-2one ( $S, R$ )-syn-44 ( $0.12 \mathrm{~g}, 60 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.29; mp 120$122^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{23}=+121.6\left(c 0.6, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780$ ( $\mathrm{OC}=\mathrm{O}$ ) and 1702 ( $\mathrm{NC}=\mathrm{O}$ ); (Found $\mathrm{MNH}_{4}{ }^{+}$, 341.1860; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$341.1860). $R_{\mathrm{F}}$ differences [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)]-(S,S)-anti-37 ( $R_{\mathrm{F}} 0.63$ ); ( $R, S$ )-syn-37 ( $R_{\mathrm{F}} 0.50$ ); ( $R, R$ )-anti-44 ( $R_{\mathrm{F}} 0.47$ ) and ( $(S, S)$ -syn-44 ( $R_{\mathrm{F}} 0.29$ ).
4.50. Parallel kinetic resolution of pentafluorophenyl 2-(4-isobutylphenyl)propanoate (rac)-7 with 4-isopropyl-oxazolidin-2one ( $S$ )-13 and 4-phenyl oxazolidin-2-one ( $R$ )-8

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4 -isopropyl-oxazoli-din-2-one ( $S$ )- $\mathbf{1 3}$ ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-phenyl oxazolidin-2-one $(R)-\mathbf{8}(0.106 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-(4-isobutylphenyl)propanoate ( rac )-7 ( $0.539 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $(S, S$ )-anti-38 (ratio 95:5:syn-:anti-) and oxazolidin-2-ones ( $(, R)$-synand ( $R, R$ )-anti-10 (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give oxazoli-din-2-one ( $S, S$ )-anti-38 ( $8 \mathrm{mg}, 4 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.77; $v_{\text {max }}$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1776(\mathrm{OC}=\mathrm{O})$ and $1692(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{25}=+117.3(c$ 1.3, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}, 318.20062 ; \mathrm{C}_{19} \mathrm{H}_{28} \mathrm{NO}_{3}$ requires
318.2064); the oxazolidin-2-one ( $R, S$ )-syn- $38(0.133 \mathrm{~g}, 64 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1) $0.55 ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and 1699 $(\mathrm{NC}=0) ; \quad[\alpha]_{\mathrm{D}}^{25}=-33.0$ (c 1.2, $\mathrm{CHCl}_{3}$ ) (Found M, 317.1979; $\mathrm{C}_{29} \mathrm{H}_{27} \mathrm{NO}_{3}$ requires 317.1985); the oxazolidin-2-one ( $R, R$ )-anti-10 ( $7 \mathrm{mg}, 3 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60{ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.62; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780$ ( $\mathrm{OC}=\mathrm{O}$ ) and $1701(\mathrm{NC}=0)$; mp 155-158 ${ }^{\circ} \mathrm{C}$; $[\alpha]_{\mathrm{D}}^{25}=-145.7$ (c 3.0, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}, 352.1913 ; \mathrm{C}_{22} \mathrm{H}_{26} \mathrm{NO}_{3}$ requires 352.1907); the oxazolidin-2-one ( $S, R$ )-syn- $\mathbf{1 0}(0.134 \mathrm{~g}, 59 \%)$ as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.41; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1779(\mathrm{OC}=\mathrm{O})$ and $1705(\mathrm{NC}=0)$; $\mathrm{mp} 86-88^{\circ} \mathrm{C} ; \quad[\alpha]_{\mathrm{D}}^{25}=+118.7$ (c 6.0, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}$, 352.1909; $\mathrm{C}_{22} \mathrm{H}_{26} \mathrm{NO}_{3}$ requires 352.1907). $R_{\mathrm{F}}$ differences [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)]-(S,S)-anti-38 ( $R_{\mathrm{F}} 0.77$ ); ( $R, S$ )-syn-38 ( $R_{\mathrm{F}} 0.55$ ); ( $R, R$ )-anti-10 ( $R_{\mathrm{F}} 0.62$ ) and $(S, R)$ -syn-10 ( $R_{\mathrm{F}} 0.41$ ).
4.51. Parallel kinetic resolution of pentafluorophenyl 2-(4-chlorophenyl)propanoate (rac)-19 with 4-isopropyl-oxazolidin-2one ( $S$ )-13 and 4-phenyl-oxazolidin-2-one ( $R$ )-8

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4 -isopropyl-oxazoli-din-2-one ( $S$ )- $\mathbf{1 3}$ ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-phenyl oxazolidin-2-one $(R)-\mathbf{8}(0.106 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-(4-chlorophenyl)propanoate ( rac )-19 ( $0.508 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $(S, S$ )-anti-39 (ratio 98:2:syn-:anti-) and oxazolidin-2-ones ( $(S, R)$-synand ( $R, R$ )-anti-45 (ratio 98:2:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxaz-olidin-2-one ( $\left(S, S\right.$ )-anti- $\mathbf{3 9}$ ( $4 \mathrm{mg}, 2 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.56; $v_{\max }$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=\mathrm{O})$ and $1702(\mathrm{NC}=0) ;[\alpha]_{\mathrm{D}}^{23}=+101.5(c$ 5.8, $\mathrm{CHCl}_{3}$ ); (Found $\mathrm{MNH}_{4}+\left({ }^{35} \mathrm{Cl}\right) 313.1310 ; \mathrm{C}_{15} \mathrm{H}_{22} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}+\left({ }^{35} \mathrm{Cl}\right)$ 313.1313); the oxazolidin-2-one ( $R, S$ )-syn- 39 $(0.119 \mathrm{~g}, 62 \%)$ as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.32; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780$ ( $\mathrm{OC}=\mathrm{O}$ ) and $1700(\mathrm{NC}=0)$; $\mathrm{mp} 63-65^{\circ} \mathrm{C}$; $[\alpha]_{\mathrm{D}}^{23}=-32.4$ (c 1.9, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MNH}_{4}+\left({ }^{35} \mathrm{Cl}\right)$ 313.1311; $\mathrm{C}_{15} \mathrm{H}_{22} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\left.\mathrm{MNH}_{4}^{+}\left({ }^{35} \mathrm{Cl}\right) 313.1313\right)$; the oxazolidin-2-one $(R, R)$-anti-45 ( 5 mg , $2 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] 0.42; $[\alpha]_{\mathrm{D}}^{23}=-156.3\left(c 1.2, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$; (Found $\mathrm{MNH}_{4}^{+}\left({ }^{35} \mathrm{Cl}\right)$ 347.1154; $\mathrm{C}_{18} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}{ }^{+}\left({ }^{35} \mathrm{Cl}\right) 347.1157$ ); and the oxazolidin-2-one ( $S, R$ )-syn- 45 ( $0.126 \mathrm{~g}, 59 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.27; mp $142-145^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{23}=+144.4\left(c 1.6, \mathrm{CHCl}_{3}\right) ; v_{\max }$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1782 \quad(\mathrm{OC}=\mathrm{O})$ and $1700 \quad(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}^{+}\left({ }^{35} \mathrm{Cl}\right) \quad 347.1154 ; \mathrm{C}_{18} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}^{+}\left({ }^{35} \mathrm{Cl}\right)$ 347.1157 ); $R_{\mathrm{F}}$ differences [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)]-(S,S)-anti-39 ( $R_{\mathrm{F}} 0.56$ ); ( $R, S$ )-syn-39 ( $R_{\mathrm{F}} 0.32$ ); $(R, R)$-anti-45 ( $R_{\mathrm{F}} 0.42$ ) and ( $S, R$ )-syn-45 ( $R_{\mathrm{F}} 0.27$ ).

### 4.52. Parallel kinetic resolution of pentafluorophenyl 2-(6-methoxynaphthalene-2-yl)-propanoate (rac)-6 with 4-isopropyl-oxazolidin-2-one ( $S$ )-13 and 4-phenyl-oxazolidin-2-one ( $R$ )-8

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxazolidin-2-one ( $S$ )-13 ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-phenyl oxazolidin-2-one $(R)-\mathbf{8} \quad(0.106 \mathrm{~g}, \quad 0.65 \mathrm{mmol})$ and pentafluorophenyl

2-(6-methoxynaphthalene-2-yl)-propanoate (rac)-6 (0.574 g, 1.45 mmol ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $S, S$ )-anti-40 (ratio 96:4:syn-:anti-) and oxaz-olidin-2-ones ( $S, R$ )-syn- and ( $R, R$ )-anti-9 (ratio 96:4:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the ( $S, S$ )-anti-40 ( $6 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.51 ; $v_{\text {max }}$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1776(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=0) ;[\alpha]_{\mathrm{D}}^{23}=+194.3(c$ 1.6, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}, 342.1707 ; \mathrm{C}_{20} \mathrm{H}_{24} \mathrm{NO}_{4}^{+}$requires $\mathrm{MH}^{+}$, $342.1700)$; ( $R, S$ )-syn-40 ( $0.138 \mathrm{~g}, 62 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $\left.40-60^{\circ} \mathrm{C}\right) /$ diethyl ether (1:1)] 0.34; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1701(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{23}=-59.6$ (c 3.3, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}, 342.1701 ; \mathrm{C}_{20} \mathrm{H}_{24} \mathrm{NO}_{4}{ }^{+}$requires $\mathrm{MH}^{+}$, $342.1700)$; ( $R, R$ )-anti-9 ( $5 \mathrm{mg}, 2 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} \quad 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.45; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1779(\mathrm{OC}=0)$ and $1699(\mathrm{NC}=0) ;[\alpha]_{\mathrm{D}}^{23}=-164.2$ (c 1.3, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}, 376.1545 ; \mathrm{C}_{23} \mathrm{H}_{22} \mathrm{NO}_{4}{ }^{+}$requires $\mathrm{MH}^{+}$, 376.1543 ); and ( $S, R$ )-syn-9 ( $94 \mathrm{mg}, 38 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $\left.40-60^{\circ} \mathrm{C}\right) /$ diethyl ether (1:1)] 0.33; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=0) ;[\alpha]_{\mathrm{D}}^{23}=+166.2$ (c 1.5, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}, 376.1553 ; \mathrm{C}_{23} \mathrm{H}_{22} \mathrm{NO}_{4}{ }^{+}$requires $\mathrm{MH}^{+}$, 376.1543). $R_{\mathrm{F}}$ differences [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] - (S,S)-anti-40 ( $R_{\mathrm{F}} 0.51$ ); ( $R, S$ )-syn-40 ( $R_{\mathrm{F}}$ $0.34)$; ( $R, R$ )-anti-9 ( $R_{\mathrm{F}} 0.45$ ) and ( $S, R$ )-syn-9 ( $R_{\mathrm{F}} 0.33$ ).
4.53. Parallel kinetic resolutions of active esters (rac)-6, (rac)-7, (rac)-15, (rac)-16, (rac)-17, (rac)-18 and (rac)-19 using a quasienantiomeric combination of oxazolidin-2-ones (S)-13 and (S)-14

See Ref. 15.
4.54. Parallel kinetic resolution of pentafluorophenyl 2-phenylpropanoate (rac)-15 with 4-isopropyl-oxazolidin-2-one (S)-13 and 4-ethyl oxazolidin-2-one 4-carboxylate ( $S$ )-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxazolidin-2one (S)-13 ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate $(S) \mathbf{- 1 4}(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-phenylpropanoate (rac)-15 ( $0.458 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $(S, S$ )-anti-34 (ratio 95:5:syn-:anti-) and oxazolidin-2-ones ( $(, S, S$ )-syn- and ( $R, S$ )-anti-48 (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give oxazolidin-2-one (S,S)-anti-34 ( $5 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.64; $v_{\max }$ (film) $\mathrm{cm}^{-1} 1774$ ( $\mathrm{OC}=\mathrm{O}$ ) and $1701(\mathrm{NC}=0)$; $[\alpha]_{\mathrm{D}}^{20}=+128.9$ (c 3.5, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}$262.1434; $\mathrm{C}_{15} \mathrm{H}_{20} \mathrm{NO}_{3}{ }^{+}$requires 262.1443); the oxazolidin-2one ( $R, S$ )-syn- $\mathbf{3 4}$ ( $96 \mathrm{mg}, 57 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.43; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ $1774(\mathrm{OC}=\mathrm{O})$ and $1703(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{20}=-19.8\left(c 3.3, \mathrm{CHCl}_{3}\right)$ (Found $\mathrm{MH}^{+}$262.1432; $\mathrm{C}_{15} \mathrm{H}_{20} \mathrm{NO}_{3}{ }^{+}$requires 262.1443); the oxazolidin-2one ( $R, S$ )-anti-46 ( $4 \mathrm{mg}, 2 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.42; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ $1794(\mathrm{OC}=\mathrm{O}), 1747(\mathrm{CC}=\mathrm{O})$ and $1705(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{20}=-130.5(c$ 2.1, $\mathrm{CHCl}_{3}$ ); and the oxazolidin-2-one ( $(S, S)$-syn- $\mathbf{4 6}(90 \mathrm{mg}, 47 \%)$ as a white powder; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.30; mp 97-99 ${ }^{\circ} \mathrm{C}$; $[\alpha]_{\mathrm{D}}^{20}=+24.8\left(c 5.3, \mathrm{CHCl}_{3}\right) ; v_{\text {max }}$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1793(\mathrm{OC}=\mathrm{O}), 1747(\mathrm{CC}=0)$ and $1705(\mathrm{NC}=0)$; (Found $\mathrm{MH}^{+}$, 292.1195; $\mathrm{C}_{15} \mathrm{H}_{18} \mathrm{NO}_{5}{ }^{+}$requires 292.1185). $R_{\mathrm{F}}$ differences [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )]-(S,S)-anti-34 ( $R_{\mathrm{F}} 0.64$ ); ( $R, S$ )-syn-34 ( $R_{\mathrm{F}} 0.43$ ); ( $R, S$ )-anti-46 ( $R_{\mathrm{F}} 0.42$ ) and ( $\mathrm{S}, \mathrm{S}$ )-syn-46 ( $R_{\mathrm{F}} 0.30$ ).
4.55. Parallel kinetic resolution of pentafluorophenyl 2-phenylbutanoate (rac)-16 with 4-isopropyl-oxazolidin-2-one (S)-13 and 4-ethyl oxazolidin-2-one 4-carboxylate ( $S$ )-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxaz-olidin-2-one ( $S$ )- $\mathbf{1 3}$ ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate $(S)-14(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-phenylbutanoate (rac)-16 ( $0.478 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $(S, S$ )-anti-35 (ratio 96:4:syn-:anti-) and oxazolidin-2-ones ( $(S, S$ )-synand ( $R, S$ )-anti-47 (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether $\left(40-60^{\circ} \mathrm{C}\right) /$ diethyl ether (7:3) to give oxazolidin-2-one ( $S, S$ )-anti-35 ( $4 \mathrm{mg}, 2 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.63; mp 65$67{ }^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{20}=+128.9$ (c 3.5, $\left.\mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778$ ( $\mathrm{OC}=\mathrm{O}$ ) and $1697(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, 276.1612 ; \mathrm{C}_{16} \mathrm{H}_{22} \mathrm{NO}_{3}$ requires 276.1600 ); and the oxazolidin-2-one ( $R, S$ )-syn- 35 ( 0.108 g , $60 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] 0.53; $[\alpha]_{\mathrm{D}}^{20}=-24.6\left(c 5.0, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1778$ ( $\mathrm{OC}=\mathrm{O}$ ) and 1697 ( $\mathrm{NC}=\mathrm{O}$ ); (Found $\mathrm{MH}^{+}, 276.1587$; $\mathrm{C}_{16} \mathrm{H}_{22} \mathrm{NO}_{3}$ requires 276.1600); and the oxazolidin-2-one ( $R, S$ )-anti-35 ( $6 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.48 ;[\alpha]_{\mathrm{D}}^{20}=-131.1$ (c 3.3, $\left.\mathrm{CHCl}_{3}\right) ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1790(\mathrm{OC}=0), 1747(\mathrm{CC}=\mathrm{O})$ and 1705 ( $\mathrm{NC}=\mathrm{O}$ ) (Found $\mathrm{M}^{+}$, 305.1258; $\mathrm{C}_{16} \mathrm{H}_{19} \mathrm{NO}_{5}$ requires 305.1258); and the oxazolidin-2-one ( $S, S$ )-syn- $47(0.124 \mathrm{~g}, 62 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60{ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.38 ;[\alpha]_{\mathrm{D}}^{20}=+30.0\left(c 8.2, \mathrm{CHCl}_{3}\right)$ \{for ( $R, R$ )-syn-47; $[\alpha]_{\mathrm{D}}^{20}=-24.8$ (c $\left.\left.5.3, \mathrm{CHCl}_{3}\right)\right\} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1790(\mathrm{OC}=0), 1747(\mathrm{CC}=0)$ and $1701(\mathrm{OC}=\mathrm{O})$ (Found $\mathrm{M}^{+}, 305.1256 ; \mathrm{C}_{16} \mathrm{H}_{19} \mathrm{NO}_{5}$ requires 305.1258). $R_{\mathrm{F}}$ differences [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)]-(S,S)-anti-35 ( $R_{\mathrm{F}} 0.63$ ); ( $R, S$ )-syn- $\mathbf{3 5}\left(R_{\mathrm{F}} 0.53\right)$; ( $R, S$ )-anti-47 ( $R_{\mathrm{F}} 0.48$ ) and ( $(S, S)$-syn-47 ( $R_{\mathrm{F}} 0.38$ ).
4.56. Parallel kinetic resolution of pentafluorophenyl 2-phenyl-3-methylbutanoate (rac)-17 with 4-isopropyl-oxazolidin-2-one ( $S$ )-13 and 4-ethyl oxazolidin-2-one 4-carboxylate ( $S$ )-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxaz-olidin-2-one ( $S$ )- $\mathbf{1 3}$ ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate $(S)-14(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-phenyl-3-methylbutanoate (rac)-17 ( $0.499 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-synand ( $S, S$ )-anti-36 (ratio 68:32:syn-:anti-) and oxazolidin-2-ones ( $S, S$ )-syn- and ( $R, S$ )-anti-48 (ratio 89:11:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give an inseparable mixture of oxazolidin-2-ones ( $S, S$ )-anti-36 and ( $R, S$ )-syn-36 ( $0.114 \mathrm{~g}, 61 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.82 ; \{for ratio ( $R, S$ )-syn-36:(S,S)-anti-36: 68:32-[ $\alpha]_{\mathrm{D}}^{25}=+35.1\left(c 1.9, \mathrm{CHCl}_{3}\right)$ ); characterisation data for $(S, S)$-anti-36; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1770(\mathrm{OC}=\mathrm{O})$ and 1700 ( $\mathrm{NC}=\mathrm{O}$ ) (Found $\mathrm{MH}^{+}, 290.1751 ; \mathrm{C}_{17} \mathrm{H}_{24} \mathrm{NO}_{3}{ }^{+}$requires $\mathrm{MH}^{+}$ 290.1751); characterisation data for oxazolidin-2-one ( $R, S$ )-syn36; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.82; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1772(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=0)$ (Found $\mathrm{MH}^{+}, 290.1751 ; \mathrm{C}_{17} \mathrm{H}_{24} \mathrm{NO}_{3}{ }^{+}$requires $\mathrm{MH}^{+}$290.1751); the oxazoli-din-2-one ( $R, S$ )-anti-48 ( $14 \mathrm{mg}, 7 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ (light petroleum ether (bp $\left.40-60^{\circ} \mathrm{C}\right) /$ diethyl ether (1:1)] 0.55 ; $[\alpha]_{D}^{25}=+19.6\left(c 0.2, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1791(\mathrm{OC}=\mathrm{O})$, $1751(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 337.1761; $\mathrm{C}_{17} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}^{+} 337.1758$ ); and the oxazolidin-2-one ( $S, S$ )-syn-48 ( $0.118 \mathrm{~g}, 57 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light
petroleum ether (bp $\left.40-60^{\circ} \mathrm{C}\right) /$ diethyl ether (1:1)] 0.42; $[\alpha]_{\mathrm{D}}^{25}=-8.4\left(c \quad 0.9, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1791(\mathrm{OC}=0), 1755$ ( $\mathrm{CC}=0$ ) and $1700 \quad(\mathrm{NC}=\mathrm{O}) \quad$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 337.1756; $\mathrm{C}_{17} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$337.1758). $R_{\mathrm{F}}$ differences [light petroleum ether (bp $\left.40-60^{\circ} \mathrm{C}\right) /$ diethyl ether ( $1: 1$ )] - $(S, S)$-anti-36 ( $R_{\mathrm{F}} 0.82$ ); ( $R, S$ )-syn-36 ( $R_{\mathrm{F}} 0.82$ ); ( $R, S$ )-anti-48 $\left(R_{\mathrm{F}} 0.55\right)$ and $(S, S)$ -syn-48 ( $R_{\mathrm{F}} 0.42$ ).
4.57. Parallel kinetic resolution of pentafluorophenyl-2-(4-methylphenyl)propanoate (rac)-18 with 4-isopro-pyl-oxazolidin-2-one ( $\mathbf{S}$ )-13 and ethyl oxazolidin-2one 4-carboxylate ( $S$ )-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxaz-olidin-2-one ( $S$ )- $\mathbf{1 3}$ ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate $(S) \mathbf{- 1 4}(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-(4-methylphenyl)propanoate ( rac )- $\mathbf{1 8}$ ( $0.479 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-synand ( $S, S$ )-anti-37 (ratio 95:5:syn-:anti-) and oxazolidin-2-ones ( $S, S$ )-syn- and ( $R, S$ )-anti-49 (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether $\left(40-60^{\circ} \mathrm{C}\right) /$ diethyl ether ( $7: 3$ ) to give the oxazolidin-2-one ( $S, S$ )-anti- $\mathbf{3 7}(5 \mathrm{mg}, 3 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.63 ; \mathrm{mp} 67-69{ }^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{23}=+115.5\left(c \quad 0.7, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1779(\mathrm{OC}=\mathrm{O})$ and $1702(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}, 293.1857$; $\mathrm{C}_{16} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}, 293.1860$ ); the oxazolidin-2-one ( $R, S$ )-syn- $\mathbf{3 7}$ ( $0.104 \mathrm{~g}, 58 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ (light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.50; mp 46$48{ }^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{23}=-26.7\left(c 1.8, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1779(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 293.1858; $\mathrm{C}_{16} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}, 293.1860$ ); the oxazolidin-2-one ( $R, S$ )-anti-49 ( $8 \mathrm{mg}, 4 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ (light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.40; $[\alpha]_{\mathrm{D}}^{23}=-125.6\left(c 2.5, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ 1778 ( $\mathrm{OC}=\mathrm{O}$ ), $1745(\mathrm{CC}=\mathrm{O})$ and $1702(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 323.1596; $\mathrm{C}_{16} \mathrm{H}_{23} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}, 323.1601$ ); and the oxaz-olidin-2-one (S,S)-syn-49 ( $0.128 \mathrm{~g}, 64 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ (light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.20; $[\alpha]_{\mathrm{D}}^{23}=+34.6\left(c 0.6, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$, $1746(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 323.1607; $\mathrm{C}_{16} \mathrm{H}_{23} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}^{+}$, 323.1601). $R_{\mathrm{F}}$ differences [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)]-(S,S)-anti-37 ( $R_{\mathrm{F}} 0.63$ ); ( $R, S$ )-syn-37 ( $R_{\mathrm{F}} 0.50$ ); ( $R, S$ )-anti-49 ( $R_{\mathrm{F}} 0.40$ ) and ( $(S, S)$ -syn-49 ( $R_{\mathrm{F}} 0.20$ ).

### 4.58. Parallel kinetic resolution of pentafluorophenyl 2-(4-isobutylphenyl)propanoate (rac)-7 with 4-isopropyl-oxazolidin-2one ( $S$ )-13 and 4-ethyl oxazolidin-2-one 4-carboxylate ( $S$ )-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxaz-olidin-2-one ( $S$ )- $\mathbf{1 3}$ ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate $(S) \mathbf{- 1 4}(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-(4-isobutylphenyl)propanoate ( rac )-7 ( $0.539 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-synand ( $S, S$ )-anti- $\mathbf{3 8}$ (ratio 95:5:syn-:anti-) and oxazolidin-2-ones ( $S, S$ )-syn- and ( $R, S$ )-anti- $\mathbf{5 0}$ (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether $\left(40-60^{\circ} \mathrm{C}\right) /$ diethyl ether ( $7: 3$ ) to give oxaz-olidin-2-one ( $S, S$ )-anti-38 ( $7 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}[$ light petroleum $\left(40-60^{\circ} \mathrm{C}\right) /$ diethyl ether (1:1)] $0.77 ; v_{\max }\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1776(\mathrm{OC}=\mathrm{O})$ and $1692(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{25}=+117.3\left(c 1.3, \mathrm{CHCl}_{3}\right)$ (Found $\mathrm{MH}^{+}, 318.2062 ; \mathrm{C}_{19} \mathrm{H}_{28} \mathrm{NO}_{3}$ requires 318.2064); the oxaz-olidin-2-one ( $R, S$ )-syn- $\mathbf{3 8}\left(0.128 \mathrm{~g}, 62 \%\right.$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1) 0.55 ; $v_{\text {max }}$
$\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=\mathrm{O})$ and $1699(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{25}=-33.0(c$ $1.2, \mathrm{CHCl}_{3}$ ) (Found $\mathrm{M}, 317.1979 ; \mathrm{C}_{29} \mathrm{H}_{27} \mathrm{NO}_{3}$ requires 317.1985); the oxazolidin-2-one ( $R, S$ )-anti- $\mathbf{5 0}(7 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.53; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1791(\mathrm{OC}=\mathrm{O}), 1751(\mathrm{CC}=0)$ and $1701(\mathrm{NC}=\mathrm{O})$; $[\alpha]_{\mathrm{D}}^{55}=-125.4 \quad\left(c \quad 1.2, \quad \mathrm{CHCl}_{3}\right)$ (Found $\quad \mathrm{MNH}_{4}{ }^{+}, \quad 365.2069$; $\mathrm{C}_{19} \mathrm{H}_{29} \mathrm{~N}_{2} \mathrm{O}_{5}$ requires 365.2171 ); and the oxazolidin-2-one ( $\mathrm{S}, \mathrm{S}$ )-syn- $\mathbf{5 0}(0.135 \mathrm{~g}, 60 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.35; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1791$ $(\mathrm{OC}=\mathrm{O}), 1747(\mathrm{CC}=\mathrm{O})$ and $1699(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{25}=+29.8$ (c 0.95, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{M}+\mathrm{NH}_{4}^{+}, \quad 365.2073 ; \quad \mathrm{C}_{19} \mathrm{H}_{29} \mathrm{~N}_{2} \mathrm{O}_{5}$ requires 365.2071 ). $R_{\mathrm{F}}$ differences [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)]-(S,S)-anti-38 ( $R_{\mathrm{F}} 0.77$ ); ( $R, S$ )-syn-38 ( $R_{\mathrm{F}} 0.55$ ); $(R, S)$-anti-50 ( $R_{\mathrm{F}} 0.53$ ) and ( $(, S)$-syn-50 ( $R_{\mathrm{F}} 0.35$ ).
4.59. Parallel kinetic resolution of pentafluorophenyl 2-(4-chlorophenyl)propanoate (rac)-19 with 4 -isopropyl-oxazolidin-2one ( $S$ )-13 and ethyl oxazolidin-2-one 4-carboxylate $(S)$-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxaz-olidin-2-one ( $S$ )-13 ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate $(S)-\mathbf{1 4}(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-(4-chlorophenyl)propanoate (rac)-19 ( $0.508 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-synand ( $S, S$ )-anti-39 (ratio 90:10:syn-:anti-) and oxazolidin-2-ones $(S, S)$-syn- and ( $R, S$ )-anti-51 (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxazolidin-2-one ( $S, S$ )-anti- $\mathbf{3 9}$ ( $12 \mathrm{mg}, 6 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.56; $[\alpha]_{\mathrm{D}}^{23}=+101.5\left(c 5.8, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=0)$ and $1702(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+} 313.1310 ; \mathrm{C}_{15} \mathrm{H}_{22} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\left.\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+} 313.1313\right)$; the oxazolidin-2-one $(R, S)$-syn- 39 ( $0.107 \mathrm{~g}, 56 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.32 ;[\alpha]_{\mathrm{D}}^{23}=-32.4$ (c 1.9 , $\left.\mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=0) ; \mathrm{mp}$ $63-65{ }^{\circ} \mathrm{C}$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+} 313.1311 ; \mathrm{C}_{15} \mathrm{H}_{22} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\left.\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+} 313.1313\right)$; and oxazolidin-2-one $(R, S)$-anti- $51(6 \mathrm{mg}$, $3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] 0.31; $[\alpha]_{\mathrm{D}}^{23}=-130.5\left(c 1.2, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1790(\mathrm{OC}=0), 1748(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+} \quad 343.1059 ; \quad \mathrm{C}_{15} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{5}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$ 343.1055 ); and the oxazolidin-2-one ( $S, S$ )-syn-51 ( $0.131 \mathrm{~g}, 62 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.20; $[\alpha]_{\mathrm{D}}^{23}=+40.0\left(c 1.8, \mathrm{CHCl}_{3}\right) ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ $1790(\mathrm{OC}=0), 1745(\mathrm{CC}=0)$ and $1700(\mathrm{NC}=0)$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$ 343.1057; $\mathrm{C}_{15} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{5}$ requires $\left.\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+} 343.1055\right) . R_{\mathrm{F}}$ differences [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $(S, S)$-anti-39 ( $R_{\mathrm{F}} 0.56$ ); ( $R, S$ )-syn-39 ( $R_{\mathrm{F}} 0.32$ ); ( $R, S$ )-anti-51 ( $R_{\mathrm{F}}$ 0.31 ) and ( $S, S$ )-syn-51 ( $R_{\mathrm{F}} 0.20$ ).
4.60. Parallel kinetic resolution of pentafluorophenyl2-(6-meth-oxynaphthalene-2-yl)-propanoate (rac)-6 with 4-isopropyl-oxazolidin-2-one ( $S$ )-13 and ethyloxazolidin-2-one 4-carboxylate (S)-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-isopropyl-oxaz-olidin-2-one ( $S$ )- $\mathbf{1 3}$ ( $84 \mathrm{mg}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate $(S)-\mathbf{1 4}(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-(6-methoxynaphthalene-2-yl)-propanoate (rac)-6 ( 0.574 g , $1.45 \mathrm{mmol})$, gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $S, S$ )-anti-40 (ratio 93:7:syn-:anti-) and oxaz-olidin-2-ones ( $S, S$ )-syn- and ( $R, S$ )-anti-52 (ratio 96:4:syn-:anti-). The crude residue was purified by flash chromatography on silica
gel eluting with light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the ( $S, S$ )-anti-40 ( $8 \mathrm{mg}, 4 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.51; $[\alpha]_{\mathrm{D}}^{23}=+194.3\left(c \quad 1.6, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1702(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, 342.1707 ; \mathrm{C}_{20} \mathrm{H}_{24} \mathrm{NO}_{4}{ }^{+}$requires $\left.\mathrm{MH}^{+}, 342.1700\right)$; ( $R, S$ )-syn-40 ( $0.126 \mathrm{~g}, 57 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.34; $[\alpha]_{\mathrm{D}}^{23}=-59.6\left(c 3.3, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1779(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, 342.1707 ; \mathrm{C}_{20} \mathrm{H}_{24} \mathrm{NO}_{4}{ }^{+}$requires $\mathrm{MH}^{+}$, $342.1700)$; ( $R, S$ )-anti-52 ( $5 \mathrm{mg}, 2 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.28 ; $[\alpha]_{\mathrm{D}}^{23}=-140.3\left(c \quad 0.9, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=0)$, $1744(\mathrm{CC}=\mathrm{O})$ and $1699(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, ~ 372.1445$; $\mathrm{C}_{20} \mathrm{H}_{22} \mathrm{NO}_{6}{ }^{+}$requires $\mathrm{MH}^{+}, 372.1442$ ); and (S,S)-syn-52 ( 0.112 g , $46 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] 0.18; $[\alpha]_{\mathrm{D}}^{23}=+55.7\left(c 3.0, \mathrm{CHCl}_{3}\right) ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O}), 1745(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 389.1703; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{6}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$, 389.1707). $R_{\mathrm{F}}$ differences [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)]-(S,S)-anti-40 ( $R_{\mathrm{F}} 0.51$ ); ( $R, S$ )-syn-40 ( $R_{\mathrm{F}} 0.34$ ); ( $R, S$ )-anti-52 ( $R_{\mathrm{F}} 0.28$ ) and ( $S, S$ )-syn-52 ( $R_{\mathrm{F}} 0.18$ ).
4.61. Parallel kinetic resolutions of active esters (rac)-6, (rac)-7, (rac)-15, (rac)-16, (rac)-17, (rac)-18 and (rac)-19 using a quasi-enantiomeric combination of oxazolidin-2-ones $(S)-13$ and ( $S$ )-14

See Ref. 15.

### 4.62. Parallel kinetic resolution of pentafluorophenyl 2-phenylpropanoate (rac)-15 with 4-phenyl-oxazolidin-2-one (S)-8 and 4-ethyl oxazolidin-2-one 4-carboxylate ( $S$ )-14

In the same way as the oxazolidin-2-one ( rac )-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-phenyl-oxazolidin-2-one (S)-8 ( $0.106 \mathrm{~g}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate (S)-14 $(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-phenylpropanoate (rac)-15 ( $0.458 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $S, S$ )-anti-41 (ratio 95:5:syn-:anti-) and oxazolidin-2-ones ( $(, S)$-syn- and ( $R, S$ )-anti-46 (ratio 98:2:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxazolidin-2-one $(S, S)$-anti-41 ( $6 \mathrm{mg}, 3 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.58 ; mp 158$160{ }^{\circ} \mathrm{C}$; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=0)$; $[\alpha]_{\mathrm{D}}^{20}=+163.7$ (c 1.8, $\mathrm{CHCl}_{3}$ ); $\left\{(R, R)\right.$-anti-41; $[\alpha]_{\mathrm{D}}^{20}=-165.2$ (c 2.0, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}, 296.1282 ; \mathrm{C}_{18} \mathrm{H}_{18} \mathrm{NO}_{3}{ }^{+}$requires 296.1287); the oxazolidin-2-one ( $R, S$ )-syn-41 ( $0.128 \mathrm{~g}, 67 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.42 ; $\mathrm{mp} 140-142^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1778(\mathrm{OC}=0)$ and $1701(\mathrm{NC}=\mathrm{O})$; $[\alpha]_{\mathrm{D}}^{20}=-92.8$ (с 2.6, $\mathrm{CHCl}_{3}$ ); $\left\{(\mathrm{S}, R)\right.$-syn-41; $[\alpha]_{\mathrm{D}}^{20}=+88.5$ (c 4.0, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}, 296.1286 ; \mathrm{C}_{15} \mathrm{H}_{18} \mathrm{NO}_{3}{ }^{+}$requires 296.1287); the oxazolidin-2-one ( $R, S$ )-anti-46 ( $4 \mathrm{mg}, 2 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.42; $v_{\text {max }}$ $\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1794(\mathrm{OC}=0), 1747(\mathrm{CC}=\mathrm{O})$ and $1705(\mathrm{NC}=0)$; $[\alpha]_{\mathrm{D}}^{20}=-130.5$ (c 2.1, $\left.\mathrm{CHCl}_{3}\right)\left\{(S, R)\right.$-anti-46; $[\alpha]_{\mathrm{D}}^{20}=-135.8$ (c 4.5, $\mathrm{CHCl}_{3}$ ); $[\alpha]_{\mathrm{D}}^{20}=-135.8$ (c 4.5, $\left.\mathrm{CHCl}_{3}\right\}$ (Found $\mathrm{MH}^{+}$, 292.1195; $\mathrm{C}_{15} \mathrm{H}_{18} \mathrm{NO}_{5}{ }^{+}$requires 292.1185); and the oxazolidin-2-one ( $\mathrm{S}, \mathrm{S}$ )-syn-46 ( $0.131 \mathrm{~g}, 69 \%$ ) as a white powder; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] 0.30; mp 97-99 ${ }^{\circ} \mathrm{C}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1793(\mathrm{OC}=\mathrm{O}), 1747(\mathrm{CC}=\mathrm{O})$ and $1705(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{20}=+24.8$ (c 5.3, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}, 292.1195 ; \mathrm{C}_{15} \mathrm{H}_{18} \mathrm{NO}_{5}^{+}$requires 292.1185). $R_{\mathrm{F}}$ differences [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] - (S,S)-anti-41 ( $R_{\mathrm{F}} 0.58$ ); ( $R, S$ )-syn-41 ( $R_{\mathrm{F}} 0.42$ ); $(R, S)$-anti-46 ( $R_{\mathrm{F}} 0.42$ ) and ( $S, S$ )-syn-46 ( $R_{\mathrm{F}} 0.30$ ).
4.63. Parallel kinetic resolution of pentafluorophenyl 2-phenylbutanoate (rac)-16 with 4-phenyl-oxazolidin-2-one ( $\mathbf{S}$ )-8 and ethyl oxazolidin-2-one 4-carboxylate ( $S$ )-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-phenyl-oxazoli-din-2-one ( $S$ )-8 ( $0.106 \mathrm{~g}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate $(S)-14(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-phenylbutanoate ( rac )-16 ( $0.478 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and $(S, S)$ -anti-42 (ratio 95:5:syn-:anti-) and oxazolidin-2-ones ( $S, S$ )-synand ( $R, S$ )-anti-47 (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give oxazoli-din-2-one ( $S, S$ )-anti-42 ( $6 \mathrm{mg}, 3 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.55 ; mp 136$140^{\circ} \mathrm{C} ; \quad[\alpha]_{\mathrm{D}}^{20}=+150.4 \quad\left(\mathrm{c} 4.9, \quad \mathrm{CHCl}_{3}\right)$ for $(R, R)$-anti-42; $\left.[\alpha]_{\mathrm{D}}^{20}=-160.0\left(c 0.74, \mathrm{CHCl}_{3}\right)\right\} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$, $1703(\mathrm{NC}=\mathrm{O})$ and $1600(\mathrm{Ph})$ (Found $\mathrm{MH}^{+}, 310.1430 ; \mathrm{C}_{19} \mathrm{H}_{20} \mathrm{NO}_{3}$ requires 310.1443 ); and the oxazolidin-2-one ( $R, S$ )-syn-42 ( 0.125 g , $62 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/ diethyl ether ( $1: 1$ )] 0.50 ; mp $82-84^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{20}=-95.6\left(c 3.0, \mathrm{CHCl}_{3}\right)$ $\left\{(S, R)\right.$-syn-42; $[\alpha]_{\mathrm{D}}^{20}=+77.4\left(c 4.0, \mathrm{CHCl}_{3}\right) ; v_{\max }($ film $) \mathrm{cm}^{-1} 1780$ ( $\mathrm{OC}=0$ ) and $1703(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, 310.1437 ; \mathrm{C}_{19} \mathrm{H}_{20} \mathrm{NO}_{3}$ requires 310.1443 ); the oxazolidin-2-one ( $R, S$ )-anti-47 ( $8 \mathrm{mg}, 4 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.48; $[\alpha]_{\mathrm{D}}^{20}=-131.1$ (c 3.3, $\mathrm{CHCl}_{3}$ ); $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ $1790(\mathrm{OC}=\mathrm{O}), 1747(\mathrm{CC}=\mathrm{O})$ and $1705(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{M}^{+}$, 305.1258; $\mathrm{C}_{16} \mathrm{H}_{19} \mathrm{NO}_{5}$ requires 305.1258); and the oxazolidin-2one ( $S, S$ )-syn-47 ( $0.13 \mathrm{~g}, 65 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.38; $[\alpha]_{\mathrm{D}}^{20}=+30.0$ (c 8.2, $\left.\mathrm{CHCl}_{3}\right) ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1790(\mathrm{OC}=0), 1747(\mathrm{CC}=0)$ and $1701(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{M}^{+}, \quad 305.1256 ; \quad \mathrm{C}_{16} \mathrm{H}_{19} \mathrm{NO}_{5}$ requires 305.1258). $R_{\mathrm{F}}$ differences [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] - (S,S)-anti-42 ( $R_{\mathrm{F}} 0.55$ ); ( $R, S$ )-syn-42 ( $R_{\mathrm{F}}$ $0.50)$; $(R, S)$-anti-47 ( $R_{\mathrm{F}} 0.48$ ) and ( $S, S$ )-syn-47 ( $R_{\mathrm{F}} 0.38$ ).
4.64. Parallel kinetic resolution of pentafluorophenyl 2-phenyl-3-methylbutanoate (rac)-17 with 4-phenyl-oxazolidin-2-one ( $S$ )-8 and ethyl oxazolidin-2-one 4-carboxylate ( $S$ )-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-phenyl-oxazoli-din-2-one ( $S$ )-8 $(0.106 \mathrm{~g}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate ( $S$ )-14 ( $0.103 \mathrm{~g}, 0.65 \mathrm{mmol}$ ) and pentafluorophenyl 2-phenyl-3-methylbutanoate ( rac )-17 ( $0.499 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-synand ( $S, S$ )-anti-43 (ratio 86:14:syn-:anti-) and oxazolidin-2-ones $(S, S)$-syn- and ( $R, S$ )-anti-48 (ratio 92:8:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp 40-60 ${ }^{\circ}$ )/diethyl ether (7:3) to give an inseparable mixture of oxazolidin-2-ones ( $S, S$ )-anti-43 and ( $R, S$ )-syn-43 ( $0.134 \mathrm{~g}, 64 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.64. Characterisation data for (S,S)-anti-43; colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40$60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.64; $[\alpha]_{\mathrm{D}}^{20}=+9.4\left(c \quad 0.3, \mathrm{CHCl}_{3}\right)\{(S, R)-$ anti-43; $[\alpha]_{\mathrm{D}}^{20}=-9.4$ (c 0.4, $\left.\mathrm{CHCl}_{3}\right)$ ); $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780$ ( $\mathrm{OC}=0$ ) and $1700 \quad(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 341.1860; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 341.1860$ ); the oxazolidin-2-one ( $R, S$ )-syn-43; colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40$60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.61; $[\alpha]_{\mathrm{D}}^{20}=-79.4\left(c \quad 0.1, \mathrm{CHCl}_{3}\right)$ $\left\{(S, R)\right.$-syn-43; $\left.[\alpha]_{\mathrm{D}}^{20}=+78.4\left(c \quad 0.5, \mathrm{CHCl}_{3}\right)\right\} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ $1781(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 341.1860; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 341.1860$ ); the oxazolidin-2-one $(R, S)$-anti-48 ( $10 \mathrm{mg}, 5 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.645 ;[\alpha]_{\mathrm{D}}^{25}=+19.6$ (c
0.2, $\mathrm{CHCl}_{3}$ ) CHECK; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1791(\mathrm{OC}=\mathrm{O}), 1751(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}, 337.1761 ; \mathrm{C}_{17} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+} 337.1758$ ); and the oxazolidin-2-one (S,S)-syn-48 ( 0.118 g , $57 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] 0.42; $[\alpha]_{\mathrm{D}}^{25}=-8.4\left(c 0.9, \mathrm{CHCl}_{3}\right) ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1791(\mathrm{OC}=0), 1755(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{OC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 337.1756; $\mathrm{C}_{17} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$337.1758). $R_{\mathrm{F}}$ differences [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] -(S,S)-anti-43 ( $R_{\mathrm{F}} 0.64$ ); ( $R, S$ )-syn-43 ( $R_{\mathrm{F}} 0.64$ ); ( $(R, S)$-anti-48 ( $R_{\mathrm{F}} 0.55$ ) and ( $S, S$ )-syn-48 ( $R_{\mathrm{F}} 0.42$ ).
4.65. Parallel kinetic resolution of pentafluorophenyl 2-(4-methylphenyl)propanoate (rac)-18 with 4-phenyl-oxazolidin-2-one ( $S$ )-8 and ethyl oxazolidin-2-one 4-carboxylate (S)-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-phenyl-oxazoli-din-2-one $(S)-\mathbf{8}(0.106 \mathrm{~g}, 0.65 \mathrm{mmol})$, 4-ethyl oxazolidin-2-one 4-carboxylate $(S)-\mathbf{1 4}(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-(4-methylphenyl)propanoate ( rac )-18 ( $0.479 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-synand ( $S, S$ )-anti-44 (ratio 98:2:syn-:anti-) and oxazolidin-2-ones ( $S, S$ )-syn- and ( $R, S$ )-anti-49 (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxazolidin-2-one ( $S, S$ )-anti-44 ( $2 \mathrm{mg}, 1 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.47; mp 124$126{ }^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{23}=+173.5\left(c 2.0, \mathrm{CHCl}_{3}\right)\left\{(R, R)\right.$-anti-44; $[\alpha]_{\mathrm{D}}^{20}=-179.1$ (c 3.0, $\left.\left.\mathrm{CHCl}_{3}\right)\right\} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=0)$ (Found $\mathrm{MNH}_{4}{ }^{+}, \quad 327.1710 ; \mathrm{C}_{19} \mathrm{H}_{23} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}$, 327.1700 ); the oxazolidin-2-one ( $R, S$ )-syn-44 ( $0.118 \mathrm{~g}, 59 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.29; mp $120-122^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{23}=-116.8\left(c 0.8, \mathrm{CHCl}_{3}\right)\{(S, R)-$ syn-44; $[\alpha]_{\mathrm{D}}^{20}=+121.6\left(c 0.6, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780$ ( $\mathrm{OC}=0$ ) and 1705 ( $\mathrm{NC}=\mathrm{O}$ ) (Found $\mathrm{MNH}_{4}{ }^{+}$, 327.1700; $\mathrm{C}_{19} \mathrm{H}_{23} \mathrm{~N}_{2} \mathrm{O}_{3}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}, 327.1700$ ); the oxazolidin-2-one ( $R, S$ )-anti-49 ( $6 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.40 ;[\alpha]_{\mathrm{D}}^{23}=-125.6$ (c 2.5, $\left.\mathrm{CHCl}_{3}\right) ; 1779(\mathrm{OC}=0), 1750(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}^{+}, 323.1596 ; \mathrm{C}_{16} \mathrm{H}_{23} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}^{+}, 323.1601$ ); and the oxazolidin-2-one ( $S, S$ )-syn-49 ( $0.115 \mathrm{~g}, 58 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.20 ;[\alpha]_{\mathrm{D}}^{23}=+34.6\left(c \quad 0.6, \mathrm{CHCl}_{3}\right) ; 1780(\mathrm{OC}=0), 1748(\mathrm{CC}=0)$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}, 323.1607 ; \mathrm{C}_{16} \mathrm{H}_{23} \mathrm{~N}_{2} \mathrm{O}_{5}{ }^{+}$requires $\mathrm{MNH}_{4}{ }^{+}, 323.1601$ ). $R_{\mathrm{F}}$ differences [light petroleum ether (bp 40$60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )]-(S,S)-anti-44 ( $R_{\mathrm{F}} 0.47$ ); ( $R, S$ )-syn-44 ( $R_{\mathrm{F}} 0.29$ ); ( $R, S$ )-anti-49 ( $R_{\mathrm{F}} 0.40$ ) and ( $(S, S)$-syn-49 ( $R_{\mathrm{F}} 0.20$ ).
4.66. Parallel kinetic resolution of pentafluorophenyl 2-(4-isobutylphenyl)propanoate (rac)-7 with 4-phenyl-oxazolidin-2one ( $S$ )-8 and ethyl oxazolidin-2-one 4-carboxylate $(S)$-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4 -phenyl-oxazoli-din-2-one $(S)-\mathbf{8}(0.106 \mathrm{~g}, 0.65 \mathrm{mmol})$, 4-ethyl oxazolidin-2-one 4-carboxylate $(S)-\mathbf{1 4}(0.103 \mathrm{~g}, 0.65 \mathrm{mmol})$ and pentafluorophenyl 2-(4-isobutylphenyl)propanoate (rac)-7 ( $0.539 \mathrm{~g}, 1.45 \mathrm{mmol}$ ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-synand ( $S, S$ )-anti-10 (ratio 95:5:syn-:anti-) and oxazolidin-2-ones ( $S, S$ )-syn- and ( $R, S$ )-anti-10 (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $7: 3$ ) to give the oxazolidin-2-one ( $S, S$ )-anti-10 ( $9 \mathrm{mg}, 4 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.62 ; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1701(\mathrm{NC}=\mathrm{O}) ; \mathrm{mp}$ $155-158{ }^{\circ} \mathrm{C} ; \quad[\alpha]_{\mathrm{D}}^{25}=+152.7 \quad\left(c \quad 2.0, \quad \mathrm{CHCl}_{3}\right) \quad\{(R, R)$-anti-10;
$[\alpha]_{D}^{25}=-145.7\left(c\right.$ 3.0, $\left.\left.\mathrm{CHCl}_{3}\right)\right\}$ (Found $\mathrm{MH}^{+}, 352.1913 ; \mathrm{C}_{22} \mathrm{H}_{26} \mathrm{NO}_{3}$ requires 352.1907 ); the oxazolidin-2-one ( $R, S$ )-syn-10 $(0.149 \mathrm{~g}$, $65 \%$ ) as a white crystalline solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.41; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1779$ ( $\mathrm{OC}=\mathrm{O}$ ) and $1705(\mathrm{NC}=\mathrm{O})$; $\mathrm{mp} 86-88^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{25}=-120.3$ (c 2.8, $\mathrm{CHCl}_{3}$ ); $\left\{(\mathrm{S}, \mathrm{R})\right.$-syn-10; $[\alpha]_{\mathrm{D}}^{25}=+118.7$ (c 6.0, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MH}^{+}$, 352.1909; $\mathrm{C}_{22} \mathrm{H}_{26} \mathrm{NO}_{3}$ requires 352.1907); the oxazolidin-2-one $(R, S)$-anti- $\mathbf{5 0}(7 \mathrm{mg}, 3 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ}$ )/diethyl ether (1:1)] 0.53; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ 1791 ( $\mathrm{OC}=\mathrm{O}$ ), $1751(\mathrm{CC}=\mathrm{O})$ and $1701(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{25}=-125.4$ ( $c$ 1.2, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MNH}_{4}{ }^{+}, 365.2069 ; \mathrm{C}_{19} \mathrm{H}_{29} \mathrm{~N}_{2} \mathrm{O}_{5}$ requires 365.2171 ); and the oxazolidin-2-one ( $S, S$ )-syn- $\mathbf{5 0}(0.135 \mathrm{mg}, 60 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.35; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1791$ ( $\mathrm{OC}=0$ ), 1747 (CC=O) and $1699(\mathrm{NC}=\mathrm{O}) ;[\alpha]_{\mathrm{D}}^{25}=+29.8\left(c 0.95, \mathrm{CHCl}_{3}\right)$ (Found $\mathrm{M}+\mathrm{NH}_{4}{ }^{+}$, 365.2073; $\mathrm{C}_{19} \mathrm{H}_{29} \mathrm{~N}_{2} \mathrm{O}_{5}$ requires 365.2071). $R_{\mathrm{F}}$ differences [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] - ( $\mathrm{S}, \mathrm{S}$ )-anti-10 ( $R_{\mathrm{F}} 0.62$ ); ( $R, S$ )-syn-10 ( $R_{\mathrm{F}} 0.41$ ); ( $R, S$ )-anti-50 ( $R_{\mathrm{F}} 0.53$ ) and ( $(S, S)$ -syn-50 ( $R_{\mathrm{F}} 0.35$ ).
4.67. Parallel kinetic resolution of pentafluorophenyl 2-(4-chlorophenyl)propanoate (rac)-19 with 4-phenyl-oxazolidin-2-one (S)-8 and ethyl oxazolidin-2-one 4-carboxylate (S)-14

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-phenyl-oxazoli-din-2-one ( $S$ )-8 ( $0.106 \mathrm{~g}, 0.65 \mathrm{mmol}$ ), 4-ethyl oxazolidin-2-one 4-carboxylate (S)-14 ( $0.103 \mathrm{~g}, 0.65 \mathrm{mmol}$ ) and pentafluorophenyl 2-(4-chlorophenyl)propanoate (rac)-45 ( $0.508 \mathrm{~g}, 1.45 \mathrm{mmol}$ ) gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-synand ( $S, S$ )-anti-19 (ratio 95:5:syn-:anti-) and oxazolidin-2-ones ( $S, S$ )-syn- and ( $R, S$ )-anti- $\mathbf{5 1}$ (ratio 95:5:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the oxazolidin-2-one ( $S, S$ )-anti-45 ( $6 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{F}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.42 ; $[\alpha]_{\mathrm{D}}^{23}=+161.4$ (c 1.0, $\mathrm{CHCl}_{3}$ ) $\left\{(R, R)\right.$-anti-45; $[\alpha]_{\mathrm{D}}^{23}=-156.3$ (c 1.3, $\left.\left.\mathrm{CHCl}_{3}\right)\right\} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780(\mathrm{OC}=0)$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}+\left({ }^{35} \mathrm{Cl}\right) \quad 347.1154 ; \quad \mathrm{C}_{18} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}^{+}\left({ }^{35} \mathrm{Cl}\right)$ 347.1157 ); the oxazolidin-2-one ( $R, S$ )-syn- $45(0.124 \mathrm{~g}, 58 \%$ ) as a white solid; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.27; mp $142-144^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{23}=-142.4\left(c 1.5, \mathrm{CHCl}_{3}\right)\{(S, R)-$ syn-45; $\left.[\alpha]_{\mathrm{D}}^{23}=+144.4\left(c 1.6, \mathrm{CHCl}_{3}\right)\right\} ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1782$ $(\mathrm{OC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+}$347.1154; $\mathrm{C}_{18} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{3}$ requires $\mathrm{MNH}_{4}\left({ }^{35} \mathrm{Cl}\right)^{+} 347.1157$ ); the oxazolidin-2one ( $R, S$ )-anti-51 ( $6 \mathrm{mg}, 3 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ ) $] 0.31 ;[\alpha]_{\mathrm{D}}^{23}=-130.5$ (c 1.2, $\left.\mathrm{CHCl}_{3}\right) ; v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1790(\mathrm{OC}=0), 1748(\mathrm{CC}=\mathrm{O})$ and 1700 ( $\mathrm{NC}=\mathrm{O}$ ) (Found $\mathrm{MNH}_{4}+\left({ }^{35} \mathrm{Cl}\right) 343.1059 ; \mathrm{C}_{15} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{5}$ requires $\mathrm{MNH}_{4}{ }^{+}\left({ }^{35} \mathrm{Cl}\right) 343.1055$ ); and the oxazolidin-2-one ( $S, S$ )-syn-51 ( $0.116 \mathrm{~g}, 55 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )] $0.20 ;[\alpha]_{\mathrm{D}}^{23}=+40.0\left(c 1.8, \mathrm{CHCl}_{3}\right)$; $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1790(\mathrm{OC}=\mathrm{O}), 1745(\mathrm{CC}=\mathrm{O})$ and $1700(\mathrm{NC}=\mathrm{O})$ (Found $\quad \mathrm{MNH}_{4}+\left({ }^{35} \mathrm{Cl}\right) \quad 343.1057 ; \quad \mathrm{C}_{15} \mathrm{H}_{20} \mathrm{ClN}_{2} \mathrm{O}_{5}$ requires $\mathrm{MNH}_{4}{ }^{+}\left({ }^{35} \mathrm{Cl}\right) 343.1055$ ). $R_{\mathrm{F}}$ differences [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether ( $1: 1$ )]-(S,S)-anti-45 ( $R_{\mathrm{F}} 0.42$ ); ( $R, S$ )-syn$45\left(R_{\mathrm{F}} 0.27\right)$; $(R, S)$-anti-51 ( $R_{\mathrm{F}} 0.31$ ) and ( $(S, S)$-syn-51 ( $R_{\mathrm{F}} 0.20$ ).
4.68. Parallel kinetic resolution of pentafluorophenyl 2-(6-meth-oxynaphthalene-2-yl)-propanoate (rac)-6 with 4-phenyl-oxa-zolidin-2-one ( $S$ )-8 and 4-ethyl oxazolidin-2-one 4-carboxylate (S) $\mathbf{- 1 4}$

In the same way as the oxazolidin-2-one (rac)-20, $n$-butyl lithium ( $0.58 \mathrm{~mL}, 2.5 \mathrm{M}$ in hexane, 1.45 mmol ), 4-phenyl-oxazoli-din-2-one $(S)-\mathbf{8}(0.106 \mathrm{~g}, 0.65 \mathrm{mmol})$, 4-ethyl oxazolidin-2-one

4-carboxylate ( $S$ )-14 ( $0.103 \mathrm{~g}, 0.65 \mathrm{mmol}$ ) and pentafluorophenyl 2-(6-methoxynaphthalene-2-yl)-propanoate (rac)-6 ( 0.574 g , 1.45 mmol ), gave a mixture of two diastereoisomeric oxazolidin-2-ones ( $R, S$ )-syn- and ( $S, S$ )-anti-9 (ratio 95:5:syn-:anti-) and oxaz-olidin-2-ones ( $(, S)$-syn- and ( $R, S$ )-anti-52 (ratio 98:2:syn-:anti-). The crude residue was purified by flash chromatography on silica gel eluting with light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (7:3) to give the ( $S, S$ )-anti- $\mathbf{9}\left(10 \mathrm{mg}, 4 \%\right.$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.45 ; \{(R,R)-anti-9; $[\alpha]_{\mathrm{D}}^{23}=-164.2$ (c 1.3, $\left.\mathrm{CHCl}_{3}\right)$ ); $v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1780$ ( $\mathrm{OC}=\mathrm{O}$ ) and $1703(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, 376.1545 ; \mathrm{C}_{23} \mathrm{H}_{22} \mathrm{NO}_{4}{ }^{+}$requires $\mathrm{MH}^{+}, 376.1543$ ); ( $R, S$ )-syn-9 ( $0.171 \mathrm{~g}, 70 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether ( $\mathrm{bp} 40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] $0.33 ;\left\{(S, R)-\right.$ syn $-9 ;[\alpha]_{\mathrm{D}}^{23}=+166.2$ (c 1.5, $\left.\left.\mathrm{CHCl}_{3}\right)\right\} ; v_{\max }\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1780(\mathrm{OC}=\mathrm{O})$ and $1702(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MH}^{+}, 376.1553$; $\mathrm{C}_{23} \mathrm{H}_{22} \mathrm{NO}_{4}^{+}$requires $\mathrm{MH}^{+}, 376.1543$ ); ( $R, \mathrm{~S}$ )-anti- $52(3 \mathrm{mg}, 1 \%)$ as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.28; $[\alpha]_{\mathrm{D}}^{23}=-140.3$ (c 0.9, $\left.\left.\mathrm{CHCl}_{3}\right)\right\} ; v_{\max }\left(\mathrm{CHCl}_{3}\right)$ $\mathrm{cm}^{-1} 1782(\mathrm{OC}=0), 1749(\mathrm{CC}=0)$ and $1700(\mathrm{NC}=0)$ (Found $\mathrm{MH}^{+}$, $372.1445 ; \mathrm{C}_{20} \mathrm{H}_{22} \mathrm{NO}_{6}{ }^{+}$requires $\mathrm{MH}^{+}, 372.1442$ ); and ( $\mathrm{S}, \mathrm{S}$ )-syn-52 ( $0.118 \mathrm{~g}, 49 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum ether (bp $40-60{ }^{\circ} \mathrm{C}$ )/diethyl ether (1:1)] 0.18; $\left.[\alpha]_{\mathrm{D}}^{23}=+55.7\left(c 3.0, \mathrm{CHCl}_{3}\right)\right\}$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1} 1781(\mathrm{OC}=0), 1754(\mathrm{CC}=0)$ and $1701(\mathrm{NC}=\mathrm{O})$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 389.1703; $\mathrm{C}_{20} \mathrm{H}_{25} \mathrm{~N}_{2} \mathrm{O}_{6}{ }^{+}$requires $\mathrm{MNH}_{4}^{+}$, 389.1707). $R_{\mathrm{F}}$ differences [light petroleum ether (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/ diethyl ether (1:1)] - (S,S)-anti-9 ( $R_{\mathrm{F}} 0.45$ ); ( $R, S$ )-syn-9 ( $R_{\mathrm{F}} 0.33$ ); $(R, S)$-anti-52 ( $R_{\mathrm{F}} 0.28$ ) and ( $(, S)$-syn-52 ( $R_{\mathrm{F}} 0.18$ ).

### 4.69. Hydrolysis of oxazolidin-2-ones

### 4.69.1. 2-Phenylpropanoic acid (+)-(S)-53

Lithium hydroxide monohydrate ( $71 \mathrm{mg}, 1.69 \mathrm{mmol}$ ) was slowly added to a stirred solution of oxazolidin-2-one ( $(, R)$-syn$41(0.25 \mathrm{~g}, 0.84 \mathrm{mmol})$ and hydrogen peroxide ( $0.47 \mathrm{~mL}, 3.53 \mathrm{M}$ in $\mathrm{H}_{2} \mathrm{O}, 1.69 \mathrm{mmol}$ ) in THF/water ( $1: 1 ; 5 \mathrm{~mL}$ ). The reaction mixture was stirred at room temperature for 12 h . The reaction was quenched with water ( 10 mL ) and extracted with dichloromethane ( $3 \times 10 \mathrm{~mL}$ ). The combined organic layers were dried (over $\mathrm{MgSO}_{4}$ ) and evaporated under reduced pressure to give the recovered 4 -phenyloxazolidin-2-one ( $R$ )-8 ( $127 \mathrm{mg}, 93 \%$ ) as a white solid; $R_{\mathrm{F}}$ [ethyl acetate/ethanol (9:1)] 0.71; mp 130-133 ${ }^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{20}=-54.0$ (c 1.0, $\mathrm{CHCl}_{3}$ ); $v_{\max }\left(\mathrm{CHCl}_{3}\right) / \mathrm{cm}^{-1} 3262(\mathrm{NH})$ and $1736(\mathrm{C}=0) ; \delta_{\mathrm{H}}$ ( $400 \mathrm{MHz} ; \mathrm{CDCl}_{3}$ ) $7.41-7.31(5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH} ; \mathrm{Ph}), 5.69(1 \mathrm{H}, \mathrm{s}$, $\mathrm{NH}), 4.93(1 \mathrm{H}, \mathrm{dd}, J 8.6$ and $6.9, \mathrm{PhCHN}), 4.72\left(1 \mathrm{H}, \mathrm{t}, J 8.6, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$ and $4.17\left(1 \mathrm{H}, \mathrm{dd}, J 8.6\right.$ and $\left.6.9, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 159.4$ ( $\mathrm{C}=\mathrm{O}$ ), 139.3 ( $i-\mathrm{C} ; \mathrm{Ph}$ ), 129.2, ${ }^{2} 128.9^{1}$ and $126.0^{2}(5 \times \mathrm{CH}$; Ph), 72.5 $\left(\mathrm{CH}_{2} \mathrm{O}\right)$ and 56.3 ( PhCHN ) (Found $\mathrm{MNH}_{4}{ }^{+}$, 181.0970; $\mathrm{C}_{9} \mathrm{H}_{13} \mathrm{~N}_{2} \mathrm{O}_{2}$ requires 181.0972). The aqueous phase was acidified using $\mathrm{HCl}(3 \mathrm{M}$ $\mathrm{HCl})$ until the $\mathrm{pH}=3$, and extracted with diethyl ether $(3 \times 10 \mathrm{~mL})$. The combined organic phases were dried (over $\mathrm{MgSO}_{4}$ ) and evaporated under reduced pressure to give 2-phenylpropanoic acid ( $S$ )53 ( $113 \mathrm{mg}, 90 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum spirit (bp 40-60 ${ }^{\circ} \mathrm{C}$ )/diethyl ether (1:9)] 0.5; $[\alpha]_{\mathrm{D}}^{23}=+69.5\left(c 8.2, \mathrm{CHCl}_{3}\right)$; $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) / \mathrm{cm}^{-1} 1706(\mathrm{C}=0) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.45-6.98$ ( $5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH}$; Ph), $3.75\left(1 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{PhCHCH}_{3}\right)$ and $1.50(3 \mathrm{H}, \mathrm{d}$, $J$ 7.2, $\mathrm{PhCHCH}_{3}$ ); $\delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 180.4$ (C=O), 139.7 (i-C; $\mathrm{Ph}), 128.7,{ }^{2} 127.6^{2}$ and $127.4^{1}\left(5 \times \mathrm{CH}\right.$; Ph), $45.3\left(\mathrm{PhCHCH}_{3}\right)$ and $18.1\left(\mathrm{PhCHCH}_{3}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}, 151.0753 ; \mathrm{C}_{9} \mathrm{H}_{11} \mathrm{NO}_{2}$ requires 151.0759).

### 4.69.2. 2-Phenylpropanoic acid (-)-(R)-53

In the same way as the 2-phenylpropanoic acid $(S)$ - $\mathbf{5 3}$, oxazoli-din-2-one ( $R, S$ )-syn- $\mathbf{3 4}(0.2 \mathrm{~g}, \quad 0.76 \mathrm{mmol}$ ), lithium hydroxide monohydrate ( $64 \mathrm{mg}, 1.53 \mathrm{mmol}$ ) and hydrogen peroxide ( $0.43 \mathrm{~mL}, 3.53 \mathrm{M}$ in $\mathrm{H}_{2} \mathrm{O}, 1.53 \mathrm{mmol}$ ) in $\mathrm{THF} /$ water ( $1: 1 ; 3 \mathrm{~mL}$ ) gave, the recovered 4 -isopropyl-oxazolidin-2-one ( $S$ )-13 ( 76 mg ,
$78 \%$ ) as a white solid; $R_{\mathrm{F}}$ [ethyl acetate/ethanol (9:1)] 0.82; mp $71-73^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{20}=+13.0\left(c 2.6, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) / \mathrm{cm}^{-1} 3455$ ( NH ) and $1750(\mathrm{C}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.26(1 \mathrm{H}$, broad s , $\mathrm{NH}), 4.34\left(1 \mathrm{H}, \mathrm{t}, J 8.7, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.00\left(1 \mathrm{H}, \mathrm{dd}, J 8.7\right.$ and $\left.6.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$ and $3.53(1 \mathrm{H}$, tdd, $J 8.7,6.7$ and $6.4, \mathrm{CHN})$; $1.67-1.57(1 \mathrm{H}$, br octet, $J$ $\left.\sim 6.7, \mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 0.86\left(3 \mathrm{H}, \mathrm{d}, J 6.7, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $0.80(3 \mathrm{H}, \mathrm{d}, J 6.7$, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 160.6(\mathrm{C}=\mathrm{O}), 68.4\left(\mathrm{CH}_{2} \mathrm{O}\right), 58.2$ ( CHN ), $32.6\left(\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right)$, $17.7\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and $17.4\left(\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}, \quad 147.1129 ; \quad \mathrm{C}_{9} \mathrm{H}_{15} \mathrm{~N}_{2} \mathrm{O}_{2}$ requires $\mathrm{MNH}_{4}{ }^{+}$, 147.1128); and 2-phenylpropanoic acid ( $R$ )-53 ( $97 \mathrm{mg}, 85 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum spirit (bp $40-60^{\circ} \mathrm{C}$ )/diethyl ether (1:9)] 0.5; $[\alpha]_{D}^{23}=-68.5\left(c 2.4, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) \mathrm{cm}^{-1}$ 1710 ( $\mathrm{C}=\mathrm{O}$ ) (Found $\mathrm{MNH}_{4}{ }^{+}, 151.0755$; $\mathrm{C}_{9} \mathrm{H}_{11} \mathrm{NO}_{2}$ requires 151.0759).

### 4.69.3. 2-Phenylpropanoic acid (+)-(S)-53

In the same way as the 2 -phenylpropanoic acid $(S)$ - 53 , oxazoli-din-2-one ( $S, S$ )-syn- 46 ( $0.12 \mathrm{~g}, 0.41 \mathrm{mmol}$ ), lithium hydroxide monohydrate ( $34 \mathrm{mg}, 0.82 \mathrm{mmol}$ ) and hydrogen peroxide ( $0.23 \mathrm{~mL}, 3.53 \mathrm{M}$ in $\mathrm{H}_{2} \mathrm{O}, 0.82 \mathrm{mmol}$ ) in THF/water ( $1: 1 ; 3 \mathrm{~mL}$ ) gave, the (S)-oxazolidin-2-one-4-carboxylic acid ( $24 \mathrm{mg}, 38 \%$ ) as a white solid; (S)-2-oxo-oxazolidine-4-carboxylic acid ( 24 mg , $38 \%$ ) as a white solid; $R_{\mathrm{F}}$ (ethyl acetate) $0.10 ;[\alpha]_{\mathrm{D}}^{20}=-13.0$ (c 1.2, $\mathrm{H}_{2} \mathrm{O}$ ); mp 109-112 ${ }^{\circ} \mathrm{C}$; $v_{\text {max }}$ (film) 3493-3340 $\mathrm{cm}^{-1}$ ( NH and OH ), $1741 \mathrm{~cm}^{-1}(\mathrm{C}=\mathrm{O})$ and $1652 \mathrm{~cm}^{-1}(\mathrm{C}=0)$; $\delta_{\mathrm{H}}\left(400 \mathrm{MHz}\right.$, DMSO-d $\left.\mathrm{d}_{6}\right)$ $8.13(1 \mathrm{H}, \mathrm{br} \mathrm{s}, \mathrm{NH}), 4.65-4.46(1 \mathrm{H}, \mathrm{t}, J 8.7, \mathrm{CHN}), 4.33(1 \mathrm{H}, \mathrm{dd}, J$ 8.7 and $\left.4.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right), 4.27\left(1 \mathrm{H}\right.$, dd, $J 8.7$ and $\left.4.2, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{O}\right)$ and $3.35(1 \mathrm{H}, \mathrm{br} \mathrm{s}, \mathrm{OH}) ; \delta_{\mathrm{C}}\left(100.7 \mathrm{MHz}\right.$, acetone- $d_{6}$ ) $171.8(\mathrm{OC}=\mathrm{O})$, $158.6(\mathrm{NC}=\mathrm{O}), 66.7\left(\mathrm{CH}_{2} \mathrm{O}\right)$ and $53.4(\mathrm{CHN})$ (Found $\mathrm{MNH}_{4}^{+}$, 149.0557. $\mathrm{C}_{4} \mathrm{H}_{9} \mathrm{~N}_{2} \mathrm{O}_{4}$ requires 149.0557); and 2-phenylpropanoic acid ( $R$ )-53 ( $53 \mathrm{mg}, 87 \%$ ) as a colourless oil; $R_{\mathrm{F}}$ [light petroleum spirit (bp $40-60^{\circ} \mathrm{C}$ ) / diethyl ether (1:9)] 0.5; $[\alpha]_{\mathrm{D}}^{23}=+69.2$ (c 2.6, $\mathrm{CHCl}_{3}$ ) (Found $\mathrm{MNH}_{4}{ }^{+}, 151.0757 ; \mathrm{C}_{9} \mathrm{H}_{11} \mathrm{NO}_{2}$ requires 151.0759).

### 4.69.4. 2-Phenylbutanoic acid (+)-(S)-54

In the same way as the 2-phenylpropanoic acid ( $S$ )-53, oxazoli-din-2-one ( $S, R$ )-syn- $42(0.2 \mathrm{~g}, \quad 0.64 \mathrm{mmol})$, lithium hydroxide monohydrate ( $53 \mathrm{mg}, 1.28 \mathrm{mmol}$ ) and hydrogen peroxide ( $0.36 \mathrm{~mL}, 3.53 \mathrm{M}$ in $\mathrm{H}_{2} \mathrm{O}, 1.28 \mathrm{mmol}$ ) in THF/water ( $1: 1 ; 3 \mathrm{~mL}$ ) gave, the recovered 4-phenyl oxazolidin-2-one ( $R$ )-8 ( $95 \mathrm{mg}, 82 \%$ ) as a white solid; and 2-phenylbutanoic acid (S)-54 (95 mg, 91\%) as a colourless oil; $[\alpha]_{\mathrm{D}}^{20}=+65.5\left(c 4.0, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) / \mathrm{cm}^{-1}$ $3295(\mathrm{OH})$ and $1719(\mathrm{C}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.30-7.20(5 \mathrm{H}$, $\mathrm{m}, 5 \times \mathrm{CH}$; Ph ), 3.43 ( $1 \mathrm{H}, \mathrm{t}, J 7.7$; PhCHCO), 2.16-2.03 (1H, ddq, J $7.5,7.5$ and $\left.7.4, \mathrm{CH}_{A} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}\right), 1.85-1.79(1 \mathrm{H}, \mathrm{ddq}, J 7.5,7.5$ and $7.4, \mathrm{CH}_{\mathrm{A}} \mathrm{H}_{\mathrm{B}} \mathrm{CH}_{3}$ ) and $0.90\left(3 \mathrm{H}, \mathrm{t}, \mathrm{J} 7.4, \mathrm{CH}_{2} \mathrm{CH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ $181.0(\mathrm{C}=\mathrm{O}), 138.6(i-\mathrm{C} ; \mathrm{Ph}), 128.8,{ }^{2} 128.2^{2}$ and $127.6^{1}(5 \times \mathrm{CH}$; $\mathrm{Ph}), 53.6(\mathrm{PhCHCO}), 26.5\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ and $12.2\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)$ (Found $\mathrm{M}^{+}$, 164.0832; $\mathrm{C}_{10} \mathrm{H}_{12} \mathrm{O}_{2}$ requires 164.0832 ).

### 4.69.5. 2-Phenyl-3-methylbutanoic acid (+)-( $(S)-55$

In the same way as the 2-phenylpropanoic acid ( $S$ )-53, oxazoli-din-2-one ( $S, R$ )-syn-43 ( $74 \%$ de) ( $0.15 \mathrm{~g}, 0.46 \mathrm{mmol}$ ), lithium hydroxide monohydrate ( $39 \mathrm{mg}, 0.92 \mathrm{mmol}$ ) and hydrogen peroxide ( $0.26 \mathrm{~mL}, 3.53 \mathrm{M}$ in $\mathrm{H}_{2} \mathrm{O}, 0.92 \mathrm{mmol}$ ) in THF/water ( $1: 1 ; 3 \mathrm{~mL}$ ) gave, the recovered 4-phenyl-oxazolidin-2-one $(R)-\mathbf{8}(67 \mathrm{mg}$, $90 \%$ ) as a white solid; and 2-phenyl-3-methylbutanoic acid (S)$55(68 \mathrm{mg}, 83 \%)$ as a colourless oil; $[\alpha]_{\mathrm{D}}^{20}=+48.4\left(c 2.8, \mathrm{CHCl}_{3}\right)$ (74\% ee); $v_{\text {max }}\left(\mathrm{CHCl}_{3}\right) / \mathrm{cm}^{-1} 1705(\mathrm{C}=0) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ 7.35-7.23 ( $5 \mathrm{H}, \mathrm{m}, 5 \times \mathrm{CH}$; Ph), 3.14 ( $1 \mathrm{H}, \mathrm{d}, \mathrm{J} 10.6$, PhCH), 2.39$2.28\left(1 \mathrm{H}, \mathrm{m}, \mathrm{CH}_{3} \mathrm{CHCH}_{3}\right), 1.08\left(3 \mathrm{H}, \mathrm{d}, J 6.6, \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)$ and 0.71 (3H, d, J 6.8, $\left.\mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 179.8(\mathrm{C}=0), 137.7$ ( $i-\mathrm{C} ; \mathrm{Ph}$ ), $128.6{ }^{2}{ }^{2} 128.5^{2}$ and $127.4^{1}(5 \times \mathrm{CH} ; \mathrm{Ph})$, $59.9(\mathrm{PhCH})$, $31.5\left(\mathrm{CH}_{3} \mathrm{CHCH}_{3}\right), 21.4$ and $20.1\left(2 \times \mathrm{CH}_{3} ; \mathrm{CH}_{3}^{\mathrm{A}} \mathrm{CHCH}_{3}^{\mathrm{B}}\right)\left(\right.$ Found $\mathrm{M}^{+}$, 178.0987; $\mathrm{C}_{11} \mathrm{H}_{14} \mathrm{O}_{2}$ requires 178.0988).

### 4.69.6. 2-(4-Methylphenyl)propanoic acid (+)-(S)-56

In the same way as the 2-phenylpropanoic acid ( $S$ )-53, oxazoli-din-2-one ( $S, R$ )-syn- 44 ( $0.2 \mathrm{~g}, \quad 0.64 \mathrm{mmol}$ ), lithium hydroxide monohydrate ( $53 \mathrm{mg}, 1.28 \mathrm{mmol}$ ) and hydrogen peroxide ( 36 mL , 3.53 M in $\mathrm{H}_{2} \mathrm{O}, 1.28 \mathrm{mmol}$ ) in THF/water ( $1: 1 ; 4 \mathrm{~mL}$ ) gave, the recovered 4-phenyl-oxazolidin-2-one ( $R$ )-8(93 $\mathrm{mg}, 90 \%$ ) as a white solid; and 2-(4-methylphenyl)propanoic acid (S)-56 (93 mg, 89\%) as a white solid; mp $59-60^{\circ} \mathrm{C} ;[\alpha]_{\mathrm{D}}^{20}=+64.8\left(c 4.0, \mathrm{CHCl}_{3}\right) ; v_{\max }$ $\left(\mathrm{CHCl}_{3}\right) / \mathrm{cm}^{-1} 1710(\mathrm{C}=\mathrm{O}) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.14(2 \mathrm{H}, \mathrm{d}, J 7.9$, $2 \times \mathrm{CH} ; \mathrm{Ar}), 7.08(2 \mathrm{H}, \mathrm{d}, J 7.9,2 \times \mathrm{CH} ; \mathrm{Ar}), 3.69(1 \mathrm{H}, \mathrm{q}, J 7.1$, $\left.\mathrm{ArCHCH}_{3}\right), 2.31(3 \mathrm{H}, \mathrm{s}, \mathrm{Me} ; \mathrm{Ar})$ and $1.47\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.1, \mathrm{ArCHCH}_{3}\right)$; $\delta_{\mathrm{C}}(100 \mathrm{MHz} ; \mathrm{CDCl} 3) 180.1(\mathrm{C}=0)$, 137.1 and $136.9(2 \times i-\mathrm{C} ; \mathrm{Ar})$, $129.4^{2}$ and $127.6^{2}\left(4 \times \mathrm{CH}\right.$; Ar), $44.9\left(\mathrm{ArCHCH}_{3}\right), 21.1\left(\mathrm{CH}_{3} ; \mathrm{Ar}\right)$ and $18.2\left(\mathrm{ArCHCH}_{3}\right)\left(\right.$ Found $\mathrm{MNH}_{4}^{+}$, 182.1175. $\mathrm{C}_{10} \mathrm{H}_{16} \mathrm{NO}_{2}$ requires $\mathrm{MNH}_{4}{ }^{+}, 182.1176$ ).

### 4.69.7. 2-(4-Isobutylphenyl)propanoic acid (+)-(S)-57

In the same way as the 2 -phenylpropanoic acid ( $S$ )-53, oxazoli-din-2-one ( $S, R$ )-syn-10 ( $0.2 \mathrm{~g}, \quad 0.57 \mathrm{mmol}$ ), lithium hydroxide monohydrate ( $48 \mathrm{mg}, 1.14 \mathrm{mmol}$ ) and hydrogen peroxide ( 42 mg , 3.53 M in $\mathrm{H}_{2} \mathrm{O}, 1.48 \mathrm{mmol}$ ) in THF/water ( $1: 1 ; 3 \mathrm{~mL}$ ) gave, the recovered 4-phenyl-oxazolidin-2-one $(R)-\mathbf{8}(81 \mathrm{mg}, 87 \%)$ as a white solid; and 2-(4-isobutylphenyl)propanoic acid (S)-57 (108 mg, $92 \%$ ) as a colourless oil; $[\alpha]_{\mathrm{D}}^{20}=+58.2$ (c 3.6, $\mathrm{CHCl}_{3}$ ); $\delta_{\mathrm{H}}$ ( $400 \mathrm{MHz}, \mathrm{CDCl}_{3}$ ) 7.21 ( $2 \mathrm{H}, \mathrm{dt}, J 7.9$ and $2.1,2 \times \mathrm{CH}$; Ar ); 7.11 ( $2 \mathrm{H}, \mathrm{dt}, J 7.9$ and $2.1,2 \times \mathrm{CH}$; Ar), $3.70\left(1 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{ArCHCH}_{3}\right)$, 2.41 ( $2 \mathrm{H}, \mathrm{d}, J 7.2, \mathrm{CH}_{2} \mathrm{Ar}$ ), 1.90-1.75 ( 1 H , br septet, $J \sim 6.8$, $\left.\mathrm{CH}\left(\mathrm{CH}_{3}\right)_{2}\right), 1.47\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.2, \mathrm{ArCHCH}_{3}\right)$ and $0.87(6 \mathrm{H}, \mathrm{d}, J 6.5$, $\left.2 \times \mathrm{CH}_{3} ;\left(\mathrm{CH}_{3}\right)_{2} \mathrm{CH}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz}, \mathrm{CDCl}_{3}\right) 180.3(\mathrm{C}=\mathrm{O}), 140.9(i-\mathrm{C} ;$ $\mathrm{Ar}), 137.0(i-\mathrm{C} ; \mathrm{Ar}), 129.4^{2}$ and $127.3^{2}(2 \times \mathrm{CH}$; Ar$), 45.1\left(\left(\mathrm{CH}_{3}\right)_{2} \mathrm{CH}\right)$, $44.8 \quad\left(\mathrm{ArCHCH}_{3}\right), 30.2 \quad\left(\mathrm{ArCH}_{2}\right), 22.4^{2} \quad\left(\left(\mathrm{CH}_{3}\right)_{2} \mathrm{CH}\right)$ and 18.1 ( $\mathrm{ArCHCH}_{3}$ ) (Found $\mathrm{M}^{+}, 206.1270 ; \mathrm{C}_{13} \mathrm{H}_{18} \mathrm{O}_{2}$ requires 206.1268).

### 4.69.8. 2-(4-Chlorophenyl)propanoic acid (+)-(S)-58

In the same way as the 2-phenyl-propanoic acid ( $S$ )-53, oxazoli-din-2-one ( $S, R$ )-syn-45 ( $0.2 \mathrm{~g}, \quad 0.61 \mathrm{mmol}$ ), lithium hydroxide monohydrate ( $51 \mathrm{mg}, 1.21 \mathrm{mmol}$ ) and hydrogen peroxide ( $0.34 \mathrm{~mL}, 3.53 \mathrm{M}$ in $\mathrm{H}_{2} \mathrm{O}, 1.21 \mathrm{mmol}$ ) in THF/water ( $1: 1 ; 4 \mathrm{~mL}$ ) gave, the recovered 4-phenyl-oxazolidin-2-one ( $R$ )-8 ( 85 mg , $86 \%$ ) as a white solid; and 2-(4-chlorophenyl)propanoic acid (S)58 ( $96 \mathrm{mg}, 85 \%$ ) as a white solid $\mathrm{mp} 49-53^{\circ} \mathrm{C}$; $[\alpha]_{\mathrm{D}}^{20}=+48.5$ (c $\left.4.0, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) / \mathrm{cm}^{-1} 1710(\mathrm{C}=0) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right)$ $7.30(2 \mathrm{H}, \mathrm{dt}, J 8.8$ and $2.2,2 \times \mathrm{CH}$; Ar), $7.25(2 \mathrm{H}, \mathrm{dt}, J 8.8$ and 2.2 , $2 \times \mathrm{CH} ; \mathrm{Ar}), 3.72\left(1 \mathrm{H}, \mathrm{q}, J 7.2, \mathrm{ArCHCH}_{3}\right)$ and $1.50(3 \mathrm{H}, \mathrm{d}, J 7.2$, $\left.\mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}\left(100 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 178.9(\mathrm{C}=\mathrm{O}), 138.2$ and 133.3 ( $2 \times i-\mathrm{C}$; Ar ), $129.0^{2}$ and $128.8^{2}(4 \times \mathrm{CH}$; Ar$), 44.5\left(\mathrm{ArCHCH}_{3}\right)$ and $18.1\left(\mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{MNH}_{4}{ }^{+}$, 202.0636. $\mathrm{C}_{9} \mathrm{H}_{13} \mathrm{NClO}_{2}$ requires $\mathrm{MNH}_{4}{ }^{+}$, 202.0629).
4.69.9. 2-(6-Methoxynaphthalene-2-yl)propanoic acid (+)-(S)-59

In the same way as the 2-phenylpropanoic acid ( $S$ )-53, oxazoli-din-2-one ( $(, R)$-syn-9 ( $0.2 \mathrm{~g}, 0.53 \mathrm{mmol}$ ), lithium hydroxide monohydrate ( $45 \mathrm{mg}, 1.06 \mathrm{mmol}$ ) and hydrogen peroxide $(0.30 \mathrm{~mL}$, 3.53 M in $\mathrm{H}_{2} \mathrm{O}, 1.06 \mathrm{mmol}$ ) in THF/water ( $1: 1 ; 5 \mathrm{~mL}$ ) gave, the recovered 4-phenyl-oxazolidin-2-one ( $R$ )-8(77 $\mathrm{mg}, 89 \%$ ) as a white solid; and 2-(6-methoxynaphthalene-2-yl)propanoic acid (S)-59 ( $109 \mathrm{mg}, 90 \%$ ) as a white solid; $R_{\mathrm{F}}$ [diethyl ether] 0.56 ; mp 151$153^{\circ} \mathrm{C} ; \quad[\alpha]_{\mathrm{D}}^{20}=+93.1$ (c $\left.4.2, \mathrm{CHCl}_{3}\right) ; v_{\max }\left(\mathrm{CHCl}_{3}\right) / \mathrm{cm}^{-1} 1710$ $(\mathrm{C}=0) ; \delta_{\mathrm{H}}\left(400 \mathrm{MHz} ; \mathrm{CDCl}_{3}\right) 7.70(2 \mathrm{H}, \mathrm{dd}, J 8.4$ and $2.8,2 \times \mathrm{CH}$; $\mathrm{Ph}), 7.68(1 \mathrm{H}, \mathrm{s}, \mathrm{CH} ; \mathrm{Ph}), 7.41(1 \mathrm{H}, \mathrm{dd}, J 8.4$ and $1.8, \mathrm{CH} ; \mathrm{Ar})$, 7.16-7.10 ( $2 \mathrm{H}, \mathrm{m}, 2 \times \mathrm{CH}$; Ph), $3.91\left(3 \mathrm{H}, \mathrm{s}, \mathrm{CH}_{3} \mathrm{O}\right), 3.88(1 \mathrm{H}, \mathrm{q}, \mathrm{J}$
7.0, $\mathrm{ArCHCH}_{3}$ ) and $1.59\left(3 \mathrm{H}, \mathrm{d}, \mathrm{J} 7.0, \mathrm{ArCHCH}_{3}\right) ; \delta_{\mathrm{C}}(100 \mathrm{MHz}$; $\left.\mathrm{CDCl}_{3}\right) 180.2(\mathrm{C}=0$ ), 157.9 ( $i-\mathrm{CO} ; \mathrm{Ar}$ ), 134.8, 133.8 and 128.9 ( $3 \times i-\mathrm{C}$; Ar), 129.3, 127.2, 126.2, 126.1, 119.0 and $105.6(6 \cdot \times$ CH ; Ar$), 55.3\left(\mathrm{CH}_{3} \mathrm{O}\right), 45.2\left(\mathrm{ArCHCH}_{3}\right)$ and $18.1\left(\mathrm{ArCHCH}_{3}\right) ; \mathrm{m} / \mathrm{z}$ $230\left(60 \%, \mathrm{M}^{+}\right)$and $185\left(100, \mathrm{ArCHCH}_{3}\right)$ (Found $\mathrm{M}^{+}, 230.0906$; $\mathrm{C}_{14} \mathrm{H}_{14} \mathrm{O}_{3}$ requires 230.0904).

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