Electronic Supplementary Information

Dual Enzymatic Dynamic Kinetic Resolution by *Thermoanaerobacter ethanolicus*

Secondary Alcohol Dehydrogenase and *Candida antarctica* Lipase B

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Figure S1. The structures of the alcohol substrates used in this study.
**Figure S2.** Reaction set-up for dual enzymatic DKR of phenyl-ring-containing secondary alcohols.
Figure S3. Gas chromatograms of the reference acetate ester of (S)-1a, (R)-1a and (rac)-1a.
Figure S4. GC chromatogram of racemization of (S)-1a in hexane using xerogel-immobilized W110A TeSADH (see Table 1 in the main text, entry 7).
Figure S5. GC chromatogram of racemization of (S)-1a in biphasic medium-hexane/Tris-HCl at different time intervals (see Figure 1 in the main text).
Figure S6. GC chromatogram of racemization of \((R)-1a\) in hexane using xerogel-immobilized W110A TeSADH (see Table 2 in the main text, entry 2).

Figure S7. GC chromatogram of products of CALB-catalyzed KR of \((rac)-1a\) using isopropenyl acetate after 3 h (see Table 3 in the main text, entry 1).
Figure S8. GC chromatogram of products of DKR of (*rac*-)1a using CALB-catalyzed KR and W110A TeSADH-catalyzed racemization (see Table 4 in the main text, entry 1).

Figure S9. Gas chromatograms of the reference (*rac*-)1c and corresponding acetate ester derivative
Figure S10. GC chromatogram of products of DKR of (rac)-1c using CALB-catalyzed KR and W110A TeSADH-catalyzed racemization (see Table 4 in the main text, entry 3).

Figure S11. Gas chromatograms of the reference (rac)-1d and corresponding acetate ester derivative
Figure S12. GC chromatogram of products of DKR of (rac)-1d using CALB-catalyzed KR and W110A TeSADH-catalyzed racemization (see Table 4 in the main text, entry 4).

Figure S13. Gas chromatograms of the reference (rac)-1e and corresponding acetate ester derivative.
Figure S14. GC chromatogram of products of DKR of \((\text{rac})\)-1e using CALB-catalyzed KR and W110A TeSADH-catalyzed racemization (see Table 4 in the main text, entry 5).
Figure S15. $^1$H NMR spectrum of (R)-2a produced by DKR of (rac)-1a.

Figure S16. $^{13}$C NMR spectrum of (R)-2a produced by DKR of (rac)-1a.
Figure S17. MS spectrum of (R)-2a produced by DKR of (rac)-1a.

Figure S18. $^1$H NMR spectrum of (R)-2b produced by DKR of (rac)-1b.
Figure S19. $^{13}$C NMR spectrum of (R)-2b produced by DKR of (rac)-1b.

Figure S20. MS spectrum of (R)-2b produced by DKR of (rac)-1b.
Figure S21. $^1$H NMR spectrum of (R)-2d produce by DKR of (rac)-1d.

Figure S22. $^{13}$C NMR spectrum of (R)-2d produce by DKR of (rac)-1d.
Figure S23. MS spectrum of (R)-2d produce by DKR of (rac)-1d.

Figure S24. $^1$H NMR spectrum of (R)-2e produced by DKR of (rac)-1e.
Figure S25. $^{13}$C NMR spectrum of (R)-2e produced by DKR of (rac)-1e.

Figure S26. MS spectrum of (R)-2e produced by DKR of (rac)-1e.