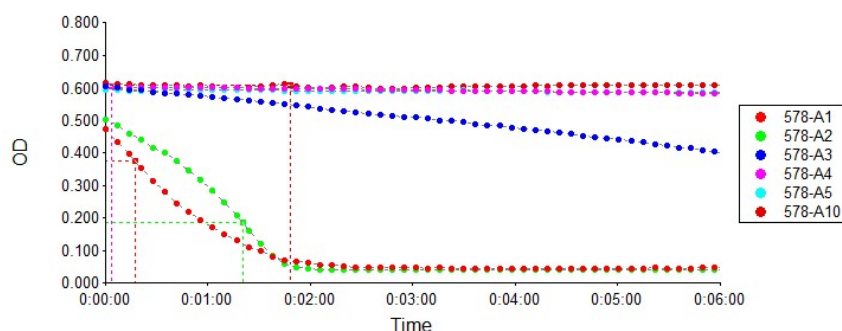
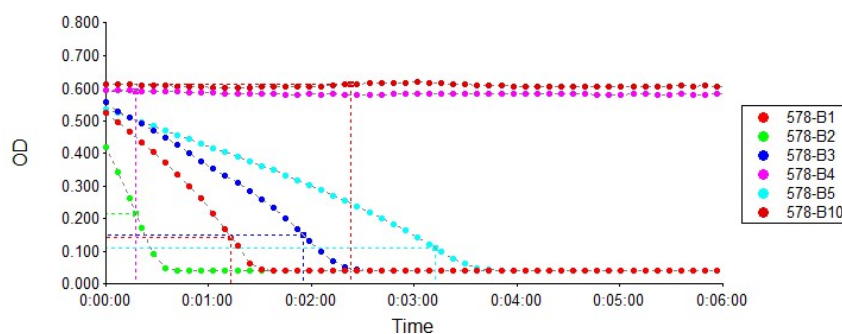


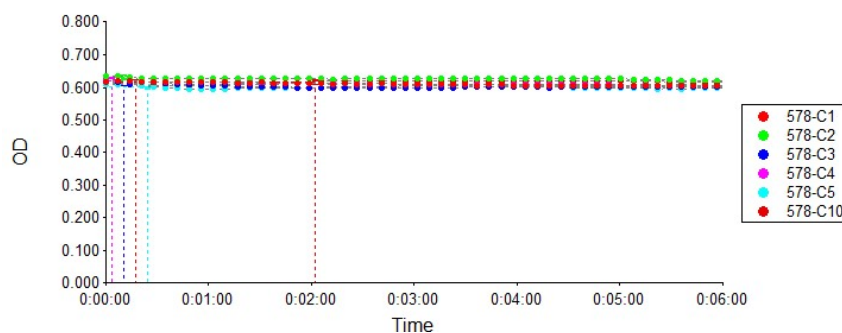
**Figure S1A.** DCPIP plate assay of CDH WT, W113A and Y195F enzyme variants with cyclohexanone (1), 3-methylcyclohexanone (2), 4,4-dimethylcyclohexanone (3),  $\delta$ -valerolactone (4), dihydrocoumarin (5), 3,3,5-trimethylcyclohexanone (6), 1-methyl-2-piperidone (7),  $\delta$ -valerolactam (8), 3,4-dihydro-2(1H)-quinolinone (9) and no substrate (10).



**Figure S1B.** WT CDH assays. Cyclohexanone (A1); 3-methylcyclohexanone (A2); 4,4-dimethylcyclohexanone (A3);  $\delta$ -valerolactone (A4); dihydrocoumarin (A5); no substrate (A10). Time H:MM:SS.



**Figure S1C.** W113A mutant assays. Cyclohexanone (B1); 3-methylcyclohexanone (B2); 4,4-dimethylcyclohexanone (B3);  $\delta$ -valerolactone (B4); dihydrocoumarin (B5); no substrate (B10). Time H:MM:SS.



**Figure S1D. Y195F mutant assays.** Cyclohexanone (C1); 3-methylcyclohexanone (C2); 4,4-dimethylcyclohexanone (C3);  $\delta$ -valerolactone (C4); dihydrocoumarin (C5); no substrate (C10). Time H:MM:SS.