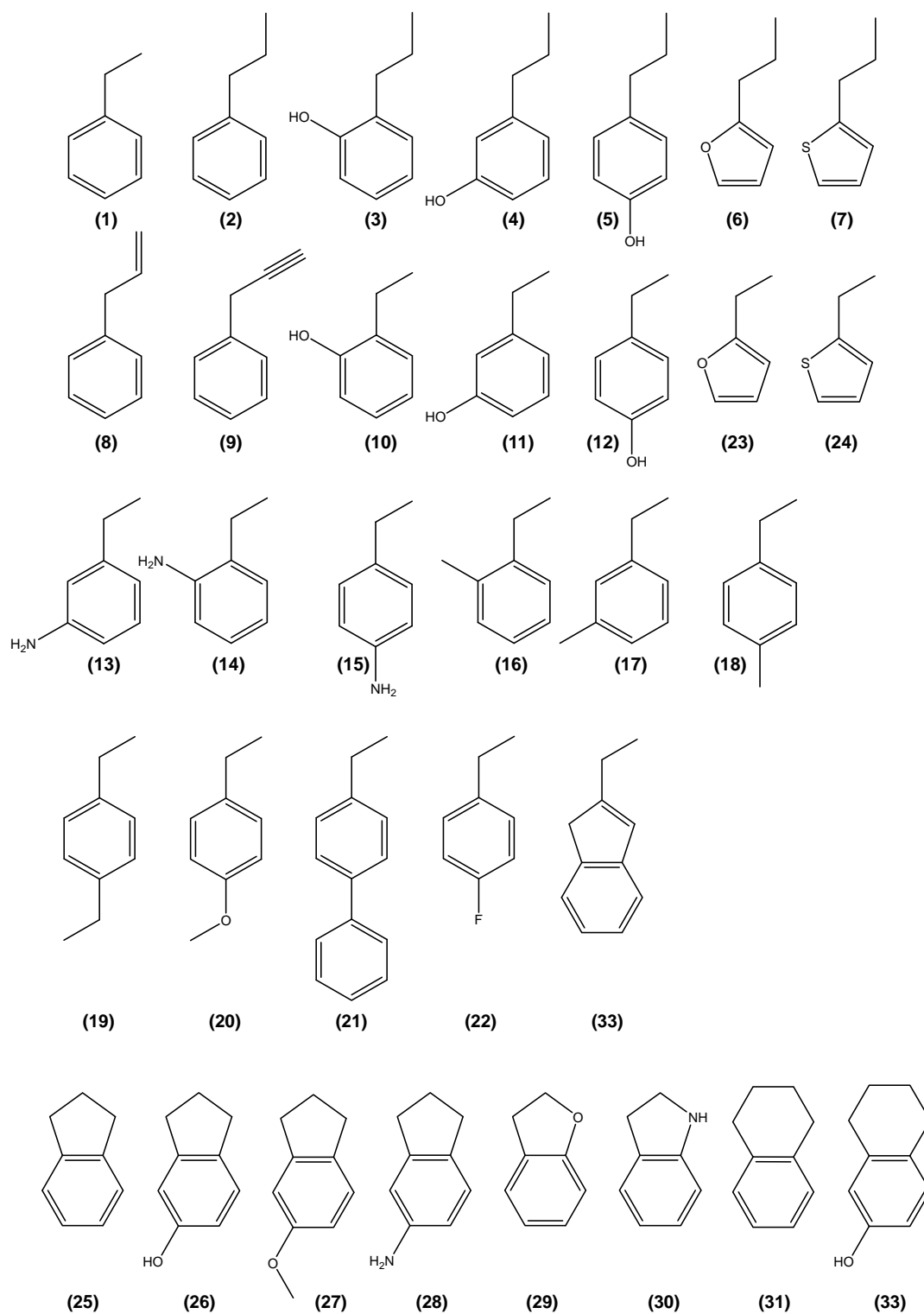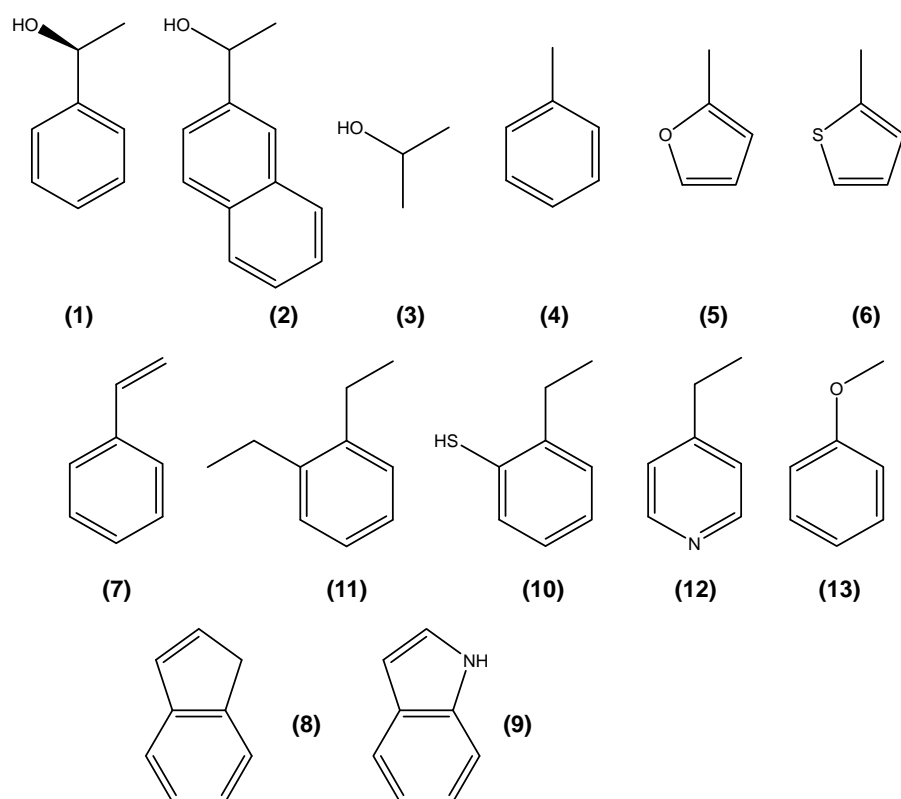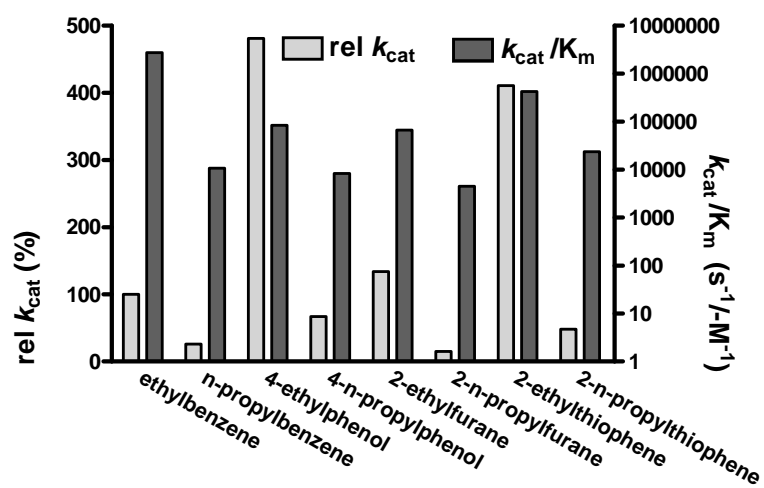# Supplemental Material

Supplemental Fig. S1. Structures of all EbDH substrates reported in the study. Substrate numbering is according to table 1 in the manuscript.

Supplemental Fig. S2. Structures of all EbDH inhibitors reported in the study. Substrate numbering is according to table 1 in the manuscript.
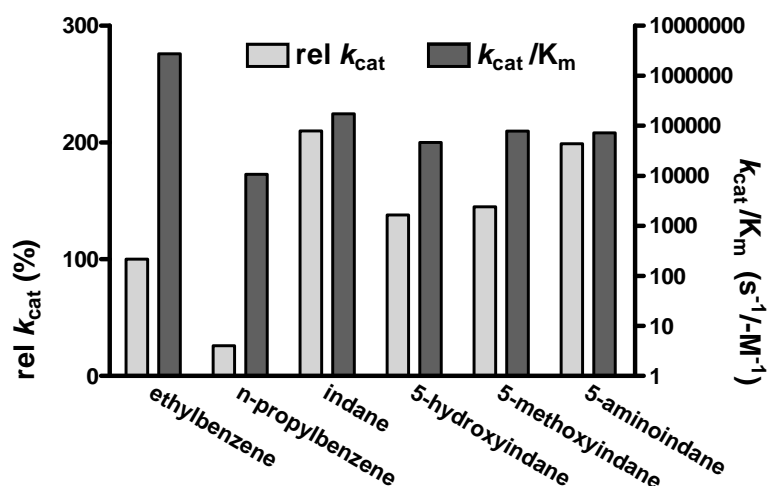

Supplemental Fig. S3: Bar chart of relative apparent k_{cat} values (left axis) and catalytic efficiencies (right axis) of EbDH substrates with ethyl and propyl side chains.
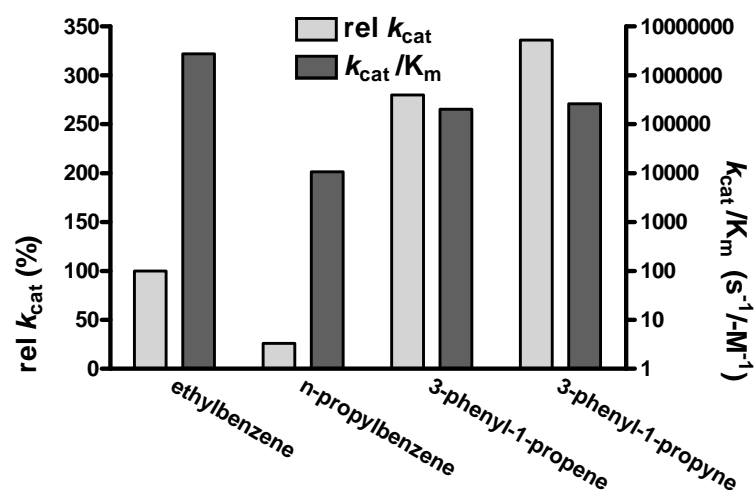
Supplemental Fig. S4: Bar chart of relative apparent k_{cat} values (left axis) and catalytic efficiencies (right axis) of EbDH substrates with multiple bonds in the substituent in comparison to ethylbenzene.
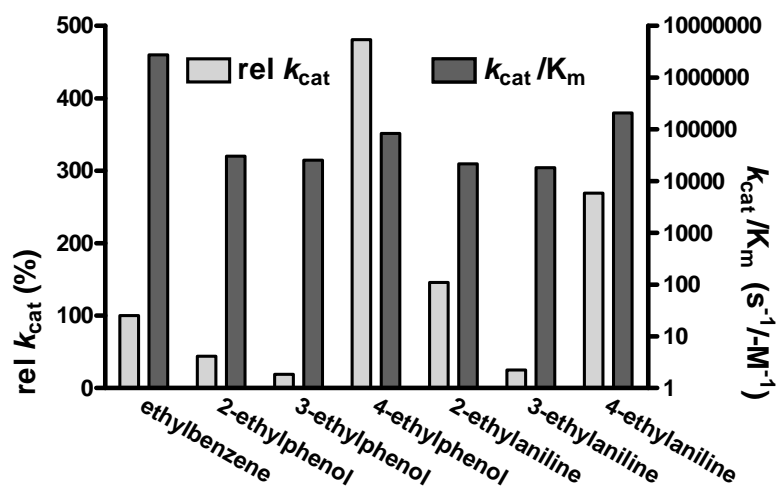

Supplemental Fig. S5: Bar chart of relative apparent k_{cat} values (left axis) and catalytic efficiencies (right axis) of EbDH substrates with *ortho-*, *meta-* and *para-* substituents in comparison to ethylbenzene.

Supplemental Fig. S6: Bar chart of relative apparent k_{cat} values (left axis) and catalytic efficiencies (right axis) of EbDH bicyclic substrates in comparison to ethylbenzene and *n*-propylbenzene.
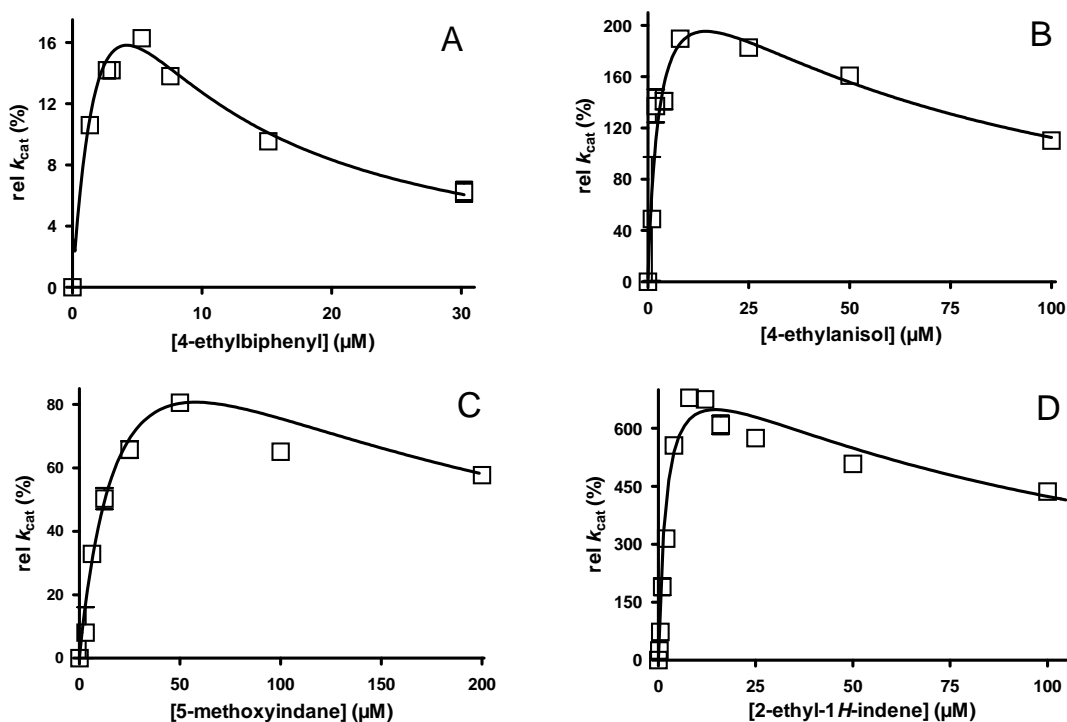
Supplemental Fig. S7: Kinetic plots of the EbDH substrates 4-ethylbiphenyl (A), 4-ethylanisol (B), 5-methoxyindane (C) and 2-ethyl-1*H*-indene (D). The kinetic data were fitted using a modified Michaelis-Menten equation including a substrate inhibition term (see supplemental Fig. S8 below).

$$v = \frac{Vmax}{1+\left(\frac{K_m}{[S]}\right)} \text{ (Michaelis Menten equation)}$$

$$v = \frac{Vmax}{1+\left(\frac{K_m}{[S]}\right)+\left(\frac{[S]}{K_i}\right)} \text{ (Michaelis Menten equation including substrate inhibition)}$$

$$v = \frac{Vmax\,[S]}{K_m\left(1+\frac{[I]}{K_{ic}}\right)+[S]} \text{ (Competitive inhibition)}$$

$$v = \frac{Vmax\,[S]}{K_m\left(1+\frac{[I]}{K_{ic}}\right)+[S]\left(1+\frac{[I]}{K_{iu}}\right)} \text{ (mixed inhibition)}$$

Supplemental Fig. S8. Equations used for fitting of kinetic data.